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GRADED EXERCISES  
IN ARITHMETIC  
FOURTH YEAR—SECOND HALF  
JURY—O'CONNELL—SHALLOW



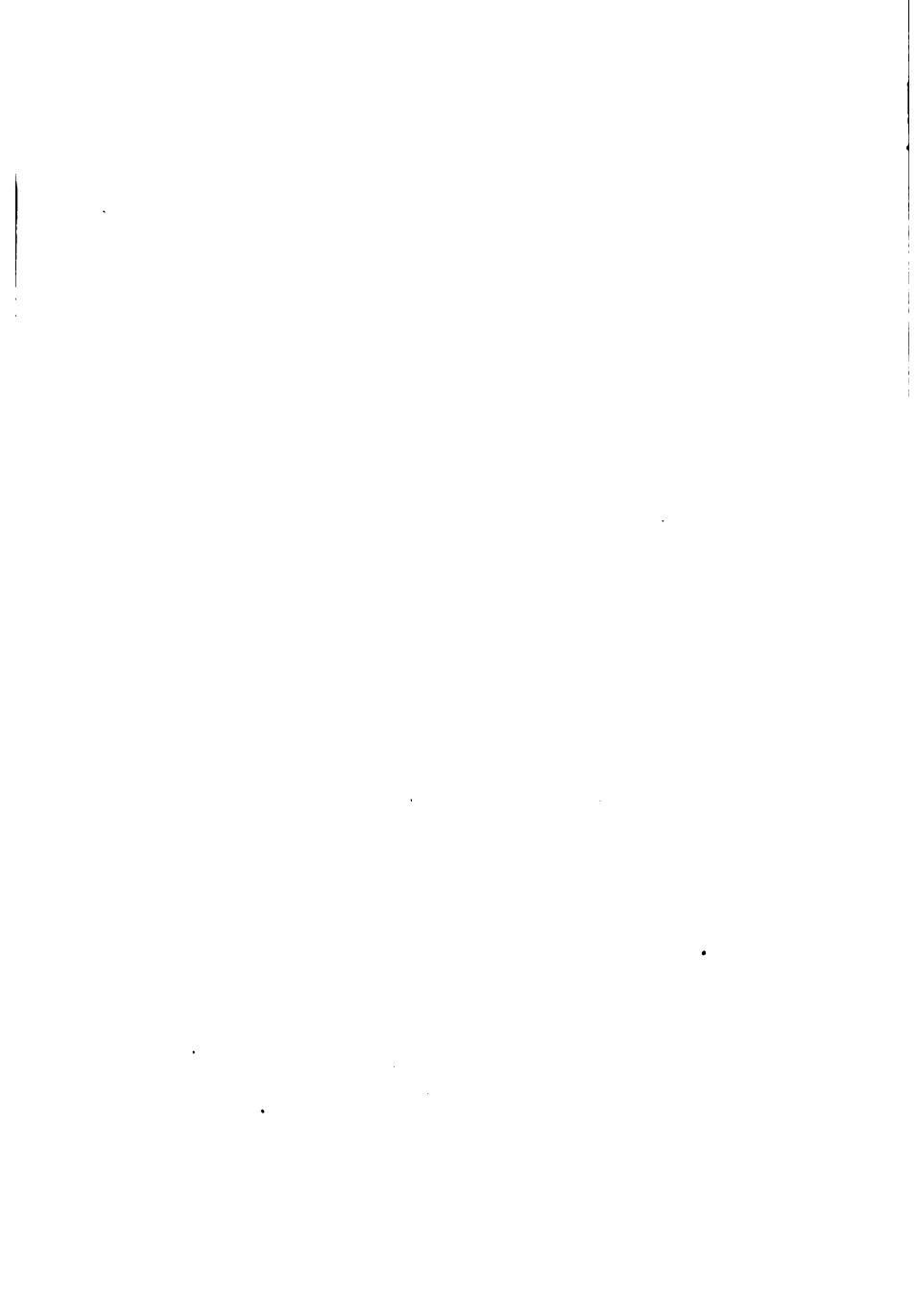
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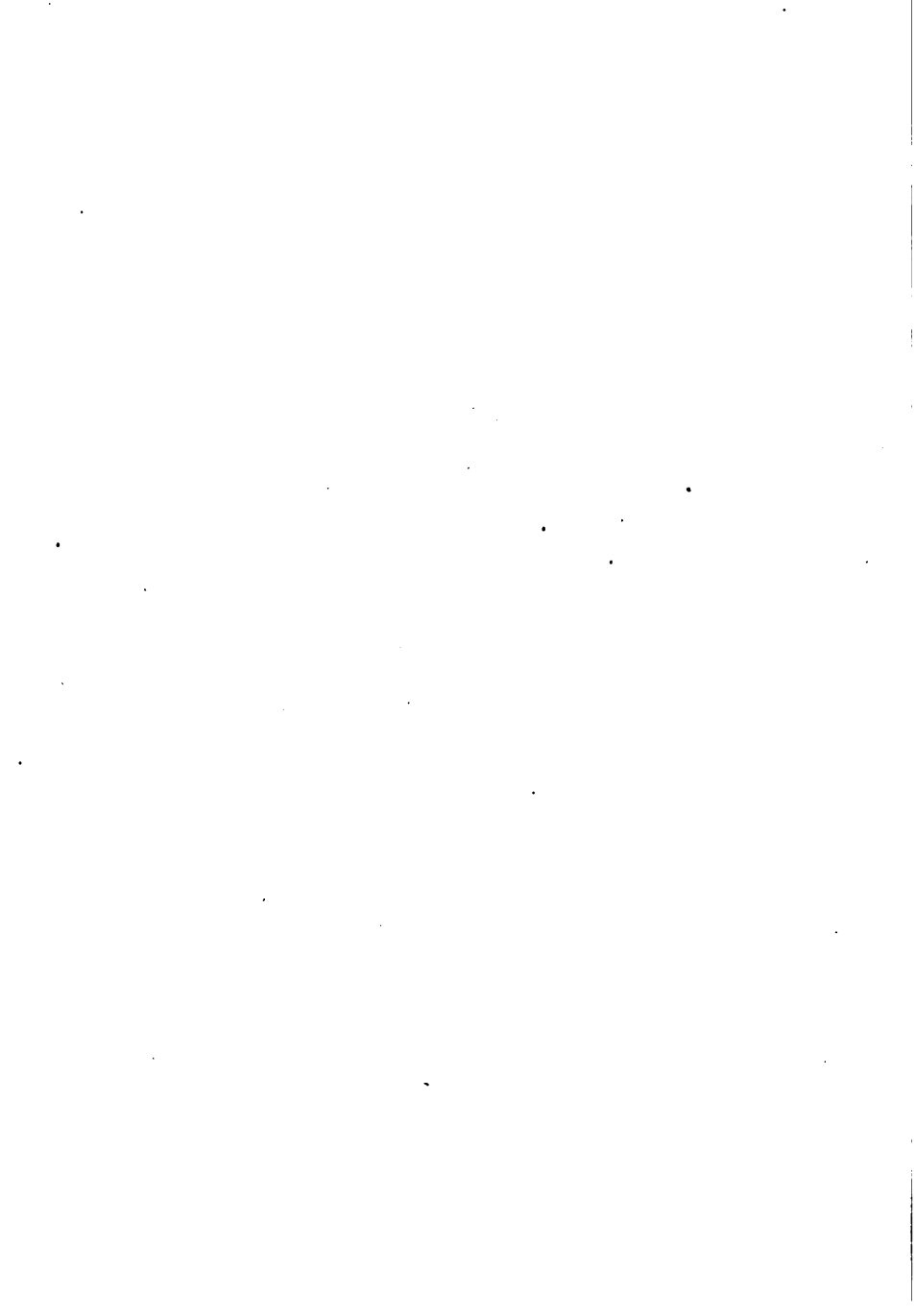


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# GRADED

## EXERCISES IN ARITHMETIC

FOURTH YEAR—SECOND HALF

BY

MARIA JURY

ASSISTANT TO PRINCIPAL, PUBLIC SCHOOL 10, BOYS, MANHATTAN

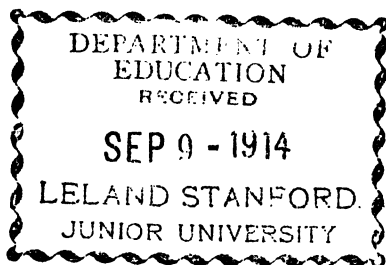
JEROME A. O'CONNELL

MEMBER BOARD OF EXAMINERS, DEPARTMENT  
OF EDUCATION, NEW YORK CITY

AND

EDWARD B. SHALLOW

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JURY. GR. EX. ARITH. FOURTH YEAR—SECOND HALF.

W. P. I

## PREFACE

THIS book has been prepared for the purpose of simplifying the study of Arithmetic and of fixing its facts in the memory.

It includes work for the second half of the fourth year and is divided into five main parts, corresponding to the months of the usual school term. Each of these parts is again divided into twenty groups of problems, corresponding to the usual number of school days in a month. One half of the oral and the written work in each group of problems will require for completion the attention of an average class for about thirty-five or forty minutes.

Each month's work is preceded by an outline of the topics to be studied, in which the new work is distinguished from the rest by being printed in full-faced type.

Provision is made for frequent reviews, including rapid calculations in the fundamental processes and examples in the most important parts of the arithmetic previously studied. By this means a proper perspective of the subject is maintained.

While most of the material has been selected for pupils of average ability, additional problems are given for pupils of advanced standing. These problems can be used also for the sake of variety, when pupils are required to go over the grade work a second time.

The language used is simple, clear, and precise. The study of mathematical relations should not be complicated by difficulties of language, nor by distractions introduced through the content of the problems. The problems here given are within the experiences of the children, and are true to conditions of everyday life.

The problems present a gradual increase in difficulty — an arrangement that conduces to steady progress and ease of comprehension. The topics are treated in the order suggested by the most approved courses of study.

THE AUTHORS.

## THIS BOOK CONTAINS

### **RAPID DRILLS**

### **READING AND WRITING LARGER NUMBERS**

### **ROMAN NUMBERS**

### **FUNDAMENTAL OPERATIONS**

Addition

Subtraction

Multiplication

Division

### **COMMON FRACTIONS**

Reduction

Mixed Numbers

Addition

Subtraction

Multiplication (one factor a  
whole number)

### **DECIMAL FRACTIONS**

Notation (to thousandths)

Addition

Subtraction

Multiplication

Division

Reduction \

### **BILLS**

### **MEASUREMENTS AND COMPARI- SONS**

### **PROBLEMS**

Finding a part of a number

Finding a number when a frac-  
tional part of it is given

Finding what part one number  
is of another



# FOURTH YEAR—SECOND HALF

## FIRST MONTH

**RAPID DRILLS**—daily. The fundamental operations as in the preceding grades.

**READING AND WRITING NUMBERS** to 1,000,000.

**MULTIPLICATION.** Using ciphers in multiplicand and also in multiplier.

**DIVISION.** Using ciphers in dividend and divisor.

**FRACTIONS.** Reduction of easy fractions to lower terms, also to higher terms. Reduction of whole or mixed numbers to improper fractions. Addition and subtraction, using easy fractions, so that the Least Common Multiple may be seen by inspection. Multiplication of a whole number by a fraction or a mixed number.

**DECIMALS.** Introduced by the rapid addition and subtraction of dollars and cents (hundredths).

**TABLES.** United States Money; Avoirdupois Weight; Liquid Measure; Dry Measure; Long Measure; Square Measure and Cubic Measure, to be memorized and applied.

**PROBLEMS.** To cover work in Common and Decimal Fractions and Tables.

### I

#### Oral

Rapidly add; then subtract:

21	22	23	24	25	11	12	13	14	15	16	17	18	29	33
14	14	15	16	7	4	4	6	6	6	9	9	11	15	18

Count by 2's from 5 to 81. Count by 3's from 4 to 91.

1. How many cents are there in  $\frac{2}{3}$  of a dollar?
2. Change 5 to halves. Change 3 to fifths.
3. James had \$3 and his mother gave him  $\frac{1}{4}$  of a dollar more. How many quarter dollars had he then?
4. If 5 yd. cost \$11, how much will 15 yd. cost?
5. If \$7 is  $\frac{1}{4}$  of my money, how much money have I?

Rapidly add ; then subtract :

67	64	65	85	96	26	43	85	72	49	54	63	81	83	95
16	23	15	23	32	12	21	25	24	14	18	27	9	17	29

Count by 4's from 3 to 87. Count by 5's from 6 to 81.

6. How many cents equal  $\frac{1}{4}$  of a dollar?
7. Change  $3\frac{2}{3}$  to thirds.\* Change  $4\frac{1}{4}$  to fourths.
8. How many feet is it around a picture 3 ft. by 2 ft.?
9. I bought  $\frac{3}{4}$  of a yard of ribbon. How many inches were in the piece?
10. If \$8 is  $\frac{1}{3}$  of my money, how much money have I?

Written.

1. Add: 47,235  
68,379  
59,862  
72,458  
36,587  
23,693  
84,724
2. From 87,562 take 35,879. Prove the answer.
3. Multiply 5672 by 306.
4. If I have \$2900 and give away  $\frac{2}{5}$  of it, how many dollars do I give away?

\* In one there are  $\frac{1}{3}$  and in 3 there are  $3 \times \frac{1}{3}$ , which is  $\frac{4}{3}$ ;  $\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$ .

5. Divide 26,634 by 132. Prove the answer.

6. One man has  $\frac{4}{5}$  of 133 bu. of oats, and another man has  $\frac{5}{6}$  of 126 bu. Which has the greater number of bushels, and how many more than the other has he?

7. I buy a barrel of sugar for \$10.80 and give a ten-dollar bill and a two-dollar bill in payment. How many apples at \$.02 each can I buy with the change due me?

8. What profit is made on a pound of spice bought at  $\$ \frac{3}{4}$  a pound and sold for \$.08 an ounce?

9. Flour is \$4.75 a barrel, and apples are \$2.40 a barrel. If I want to buy an equal number of barrels of each, how many barrels can I buy for \$171.60?

10. I sold a horse and carriage for \$793.25, thereby losing \$91.75. How much did they cost me?

## II

### Oral.

Rapidly add:

57	28	46	39	22	57	34	62	93	75	49	83	26	82	94
<u>36</u>	<u>63</u>	<u>42</u>	<u>54</u>	<u>69</u>	<u>27</u>	<u>46</u>	<u>29</u>	<u>38</u>	<u>46</u>	<u>64</u>	<u>45</u>	<u>57</u>	<u>29</u>	<u>35</u>

Count by 6's from 4 to 58. Count by 7's from 3 to 80.

1. Henry paid \$.24 for a knife and sold it at a gain of \$.07. For how much did he sell it?

2. Reduce  $3\frac{1}{5}$  to fifths. Reduce  $4\frac{2}{7}$  to sevenths.

3. Reduce  $7\frac{1}{2}$  to halves. Reduce  $6\frac{2}{3}$  to thirds.

4. A boy had 18 marbles and gave  $\frac{2}{3}$  of them to one boy and  $\frac{1}{3}$  of them to another boy. How many marbles had he left?



5. A farmer had  $9\frac{3}{4}$  bu. of wheat and sold  $5\frac{1}{4}$  bu. How many bushels had he left?

Rapidly add :

56	43	64	85	76	99	28	65	49	37	78	25	57	18	25
<u>79</u>	<u>58</u>	<u>87</u>	<u>66</u>	<u>98</u>	<u>88</u>	<u>39</u>	<u>75</u>	<u>26</u>	<u>84</u>	<u>36</u>	<u>49</u>	<u>64</u>	<u>86</u>	<u>32</u>

Count by 8's from 4 to 76. Count by 9's from 5 to 86.

6. If I spend \$6 a week, how long will \$48 last me?

7. Reduce  $8\frac{3}{4}$  in. to quarter inches;  $5\frac{1}{2}$  ft. to half feet.

8. I had  $3\frac{1}{2}$  yd. of velvet and sold  $2\frac{3}{4}$  yd. How many yards had I left?

9. In  $\frac{1}{2}$  and  $\frac{3}{4}$  how many eighths are there?

10. A boy had 60 marbles and gave away  $\frac{2}{5}$  of them. How many had he left?

Written.

Reduce  $47\frac{2}{3}$  to thirds.\*

1. Change  $49\frac{7}{12}$  to twelfths.

2. Change 44 bu. to fourths of a bushel.

3. Change  $15\frac{2}{3}$  to thirds.

4. In 78 lb. how many sixteenths of a pound are there?

5. A farmer bought a horse for \$150, a cow for  $\frac{2}{5}$  as much, and a lamb for  $\frac{1}{10}$  as much. How much did he pay for all?

6. Change 81 to a fraction having 24 for its denominator; 48 for its denominator.

7. Change  $19\frac{3}{4}$  to quarters; to eighths; to twelfths.

8. Change  $29\frac{5}{7}$  yd. to sevenths of a yard.

$$* 47 \times \frac{3}{3} = 141; 141 + \frac{2}{3} = 141\frac{2}{3}.$$

9. A dealer mixes  $2\frac{1}{2}$  lb. of black tea costing \$.32 per pound with  $1\frac{1}{2}$  lb. of green tea costing \$1.40 per pound. How much per pound does the mixed tea cost?

10. A drover buys 64 sheep for \$400. He sells  $\frac{1}{2}$  of them at \$7 each and the remainder at \$8 each. How much does he gain?

## III

## Oral.

Rapidly multiply:

47	48	49	13	14	15	16	10	18	20	21	22	23	20	25
<u>2</u>	<u>2</u>	<u>2</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>6</u>	<u>6</u>	<u>6</u>	<u>4</u>	<u>4</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>

Count by 2's from 7 to 99. Count by 3's from 6 to 84.

1. Change \$1.75 to an improper fraction; \$1.25 to an improper fraction.

2. Change  $7\frac{3}{4}$  to an improper fraction.

3. A man earns \$75 a month and spends \$55. How much does he save?

4. If one hat costs \$.50 ( $\$ \frac{1}{2}$ ), how much will 24 cost?

5. If I pay 75 cents for one book, how much must I pay for 12 books?

Rapidly multiply:

30	31	32	33	34	35	36	40	41	42	43	44	14	15	16
<u>4</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>2</u>	<u>2</u>	<u>3</u>	<u>2</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>5</u>	<u>5</u>	<u>5</u>	<u>7</u>

Count by 4's from 7 to 95. Count by 5's from 6 to 96.

6. How many ten-cent pieces should I get for one dollar? How many nickels should I get?

7. Reduce  $24\frac{3}{4}$  to an improper fraction.

8. How much will 15 ft. of molding cost at 12 cents a yard?

9. How much will 18 hats cost at 50 cents apiece?

10. How many square yards are there in a floor 6 ft. by 3 ft.?

**Written.**

- |                  |                                       |
|------------------|---------------------------------------|
| 1. Add: \$748.65 | 2. Allowing 365 da. to a year,        |
| 419.63           | how much would a man spend for        |
| 7.42             | cigars in 6 yr., if he smoked 6       |
| 106.07           | cigars a day, costing at the rate of  |
| 18.49            | two cigars for 10 cents?              |
| 9.96             | 3. Find total cost of:                |
| 8.45             | 64 bbl. of flour at \$5.25 a barrel;  |
| 63.40            | 68 bu. of wheat at \$.85 a bushel;    |
| 398.54           | 27 bbl. of apples at \$2.20 a barrel; |
| <u>987.65</u>    | 850 lb. of sugar at \$.06 a pound.    |

4. How many square feet are there in a lot of land 200 ft. long and 4 rd. wide?

5. Reduce  $29\frac{1}{2}$  to an improper fraction. Prove the answer.

---

6. A wheat merchant bought 675 bu. of wheat for \$580, and sold it for 95 cents a bushel. How much did he gain or lose?

7. A barrel of vinegar containing 37 gal. was bought for \$7.40 and sold for 8 cents a quart. What was the gain?

8. Reduce  $57\frac{1}{2}$  to an improper fraction. Explain the operation.

9. How many paces each 2 ft. in length shall we have to take in walking a mile?

10. From  $85,962\frac{1}{2}$  take  $38,659\frac{1}{4}$ .

## IV

## Oral.

Rapidly divide:

$3\overline{)29}$ ;  $3\overline{)19}$ ;  $3\overline{)17}$ ;  $3\overline{)23}$ ;  $3\overline{)11}$ ;  $3\overline{)16}$ ;  $3\overline{)8}$ ;  $3\overline{)28}$ ;  
 $3\overline{)20}$ ;  $3\overline{)22}$ ;  $3\overline{)10}$ ;  $3\overline{)13}$ ;  $3\overline{)15}$ ;  $3\overline{)21}$ ;  $3\overline{)27}$ ;  $3\overline{)25}$ .

Count by 6's from 8 to 98. Count by 7's from 6 to 90.

1. A man walked  $\frac{1}{3}$  of a mile and back in 12 min. At that rate, how long would it take him to walk a mile one way?

2. What is the difference between  $\frac{3}{4}$  of 16 and  $\frac{3}{8}$  of 32?

3. Reduce  $8\frac{3}{4}$  to an improper fraction.

4. If  $\frac{1}{4}$  of a bushel of wheat costs 18 cents, how much will  $\frac{3}{8}$  of a bushel cost?

5. A grocer found one dozen oranges bad out of a box containing 36. What part of the number was bad?

Rapidly divide:

$4\overline{)39}$ ;  $4\overline{)30}$ ;  $4\overline{)33}$ ;  $4\overline{)37}$ ;  $4\overline{)26}$ ;  $4\overline{)22}$ ;  $4\overline{)34}$ ;  $4\overline{)23}$ ;  
 $4\overline{)31}$ ;  $4\overline{)25}$ ;  $4\overline{)29}$ ;  $4\overline{)35}$ ;  $4\overline{)36}$ ;  $4\overline{)48}$ ;  $4\overline{)49}$ ;  $4\overline{)27}$ .

Count by 8's from 7 to 95. Count by 9's from 3 to 102.

6. At  $2\frac{3}{4}$  cents apiece, how much will 1 doz. eggs cost?

7. Mary lives  $\frac{1}{2}$  of a mile east of the schoolhouse, and Nellie  $\frac{2}{3}$  of a mile west. How many miles will Mary walk in visiting Nellie and returning home on Saturday afternoon?\*

\* Make a diagram, showing the distance traveled.

8. At \$.14 a peck, how much will  $1\frac{3}{4}$  bu. of potatoes cost?

9. How many quarters are there in \$32?

10. If \$16 is  $\frac{4}{5}$  of my money, how much money have I?

**Written.**

1. Reduce  $6\frac{5}{8}$  to ninths. (Explain the operation.)

2. I paid \$284 $\frac{1}{4}$  for a quantity of wheat, and sold it at a profit of \$18 $\frac{1}{2}$ . For how much did I sell it?

3. From a barrel of vinegar containing 38 gal. there were sold  $26\frac{5}{8}$  gal. What is the value of the remainder at \$.34 a gallon?

4. From  $8765\frac{1}{2}$  take  $2848\frac{5}{8}$ .

5. A man having \$9 $\frac{3}{8}$  paid \$3 $\frac{1}{4}$  for boots and \$4 $\frac{3}{8}$  for a hat. How much had he left?

---

6. A man has  $\frac{1}{2}$  of his sheep in one pasture,  $\frac{1}{3}$  in another,  $\frac{1}{6}$  in another, the remainder in a fourth. What part is in the fourth field?

7. Reduce  $72\frac{5}{8}$  to an improper fraction.

8. What number added to  $327\frac{7}{8}$  will make  $624\frac{1}{2}$ ?

9. Two men travel in opposite directions; one travels at the rate of 26 mi. a day, and the other at the rate of 35 mi. a day. How far apart will they be in 15 da. ? \*

10. How much change should I receive from \$20, after paying \$3 $\frac{1}{4}$  for a hat and \$15 $\frac{3}{8}$  for a suit of clothes?

\* Make a diagram, showing the distances traveled.

## V

## Oral.

Count by 8's to 96; by 9's to 108; by 7's to 98; by 6's to 96.

$93 + 27, + 35 = ?$   $29 + 18, + 30, + 9, + 8, + 7 = ?$  From  $9 \times 8$  take  $6 \times 4$ . From  $11 \times 11$  take  $9 \times 9$ .

1. How many times 1 in. is 1 yd.? How many times 1 pt. is 1 qt.?

2. What is  $\frac{1}{4}$  of 196?  $\frac{1}{8}$  of 159?  $\frac{1}{6}$  of 250?

3. When tea is \$.40 a pound, what part of a pound can be bought for \$.30?

4. How many eighths are there in 24? 16? 40? 32?

5. At  $\$ \frac{3}{4}$  a pound, how many pounds of tea can I buy for \$1.20? for \$.90? for \$.30? for \$1.50?

Beginning with 2, count by 9's to 101. Beginning with 3, count by 9's to 102. Begin with 4; with 5; with 6; with 7; with 8, and count by 9's to the nearest number above 100.

$6 + 8, + 2, - 3, + 2 = ?$   $13 \times 2, + 4, + 5, \times 8, + 12, + 4, \times 5 = ?$   $(7 \times 6) - (3 \times 8) = ?$   $(9 \times 12) - (9 \times 11) = ?$

6. How many bottles, each holding  $1\frac{1}{2}$  pt., will be needed to hold 2 gal. of sirup? 4 gal.? 3 gal.?

7. How many eighths are there in  $\frac{1}{2} + \frac{1}{4}$ ?

8. If  $\frac{3}{4}$  of a pound of candy costs 30 cents, how much will  $\frac{7}{8}$  of a pound cost?

9. I had  $\frac{5}{8}$  yd. and used  $\frac{1}{4}$  yd. What part was left?

10. I had 21 pencils and gave away  $\frac{3}{4}$  of them. How many had I left?

**Written.**

1. One lady bought  $\frac{3}{4}$  of 180 yd. of cloth, and another bought  $\frac{2}{3}$  of 150 yd. Which has the greater number of yards, and how many more has she than the other?

2. Reduce  $96\frac{7}{8}$  to an improper fraction. (Explain the operation.)

3. A farmer buys a horse for \$140, and sells it at an advance of  $\frac{3}{10}$  of the cost. What is the selling price?

4. I had  $173\frac{3}{4}$  yd. of cloth, and sold  $19\frac{1}{2}$  yd. at one time and  $98\frac{3}{4}$  yd. at another. How many yards had I left?

5. How many square yards are there in a roll of matting 36 in. wide and 60 ft. long?

6. Add: \$456.75

832.87

460 $\frac{3}{4}$

796 $\frac{1}{2}$

834.67

685 $\frac{1}{8}$

72.38

56.69

7. Divide 48,326 by 892.

Prove the answer.

8. 4500 is  $\frac{5}{8}$  of what number?

9. If a grocer mixes  $7\frac{1}{2}$  lb. of one kind of tea and  $3\frac{7}{8}$  lb. of another kind, and sells it for \$.64 per pound, how much does he receive for all of it?

10. A merchant buys 136 vases for \$272. If 36 are broken, how much must he charge apiece for the others in order to gain \$28 on all?

**VI****Oral.**

Rapidly answer:

$$23 + 19 = ? \quad 24 + 12 = ? \quad 32 + 27 = ? \quad 27 + 35 = ? \quad 13 + 7 = ?$$

$$50 + 25 = ? \quad 75 - 25 = ? \quad 35 + 25 = ? \quad 60 - 40 = ? \quad 43 - 29 = ?$$

$$59 - 37 = ? \quad 29 - 17 = ? \quad 64 - 29 = ? \quad 67 - 39 = ? \quad 43 - 27 = ?$$

1. How much will 24 yd. of ribbon cost at 25 cents a yard?
2. How many whole dollars are there in  $\$2\frac{4}{5}$ ?
3. How many yards are there in  $\frac{2}{3}$  yd.?
4. Change  $2\frac{1}{5}$  to a whole number.
5. If eggs are worth 30 cents a dozen and butter 40 cents a pound, how many eggs are worth 3 lb. of butter?

Rapidly answer :

$29 + 46 = ?$   $85 + 35 = ?$   $42 + 28 = ?$   $38 + 62 = ?$   $76 + 24 = ?$   
 $25 + 75 = ?$   $44 - 32 = ?$   $33 + 42 = ?$   $28 - 14 = ?$   $46 - 29 = ?$   
 $87 - 48 = ?$   $32 - 29 = ?$   $46 - 28 = ?$   $54 - 30 = ?$   $54 - 36 = ?$

6. I paid \$43 for a pony and four times as much for a buggy. How much did the buggy cost me?
7. How much will 36 yd. of silk cost at \$.75 a yard?
8. How many inches are there in  $4\frac{3}{8}$  in.?
9. Change  $2\frac{1}{4}$  to a mixed number.
10. A man having \$40 paid \$15 for a coat, \$10 for a vest, and \$9 for a pair of boots. How much money had he left?

Written.

1. Reduce  $2\frac{1}{8}$  to a whole number. (Explain the operation.)
2. Reduce  $2\frac{0}{8}$  to a mixed number.
3. In  $\frac{72}{27}$  name the dividend; name the divisor; reduce the fraction to a whole or a mixed number.
4. Change  $17\frac{3}{8}$  to an improper fraction.
5. How much will 72 yd. of cloth cost at  $\$2.12\frac{1}{2}$  a yard?
6. Change  $5\frac{80}{8}$  to a mixed number.



7. Reduce  $3\frac{4}{4}$  to a mixed number.
8. Change  $402\frac{1}{2}$  to an improper fraction.
9. What is the cost of 27 cd. of wood at  $\$3\frac{1}{2}$  per cord?
10. An end-wall of a room is 12 ft. by 12 ft. How many square feet are in it? How many square yards are in it?

## VII

## Oral.

Rapidly give the value of:

$\frac{15}{8}$ ;  $\frac{18}{8}$ ;  $\frac{12}{4}$ ;  $\frac{36}{9}$ ;  $\frac{48}{4}$ ;  $\frac{48}{8}$ ;  $\frac{48}{6}$ ;  $\frac{72}{8}$ ;  $\frac{72}{12}$ ;  $\frac{56}{7}$ ;  $\frac{22}{7}$ ;  $\frac{25}{5}$ ;  $\frac{30}{6}$ ;  
 $\frac{64}{8}$ ;  $\frac{16}{4}$ ;  $\frac{81}{9}$ ;  $\frac{27}{3}$ ;  $\frac{18}{6}$ ;  $\frac{27}{9}$ ;  $\frac{48}{6}$ ;  $\frac{26}{2}$ ;  $\frac{18}{3}$ ;  $\frac{16}{4}$ ;  $\frac{25}{5}$ ;  $\frac{36}{6}$ ;  $\frac{49}{7}$ .

1. At  $\$4$  a yard, how much will  $2\frac{7}{8}$  yd. of cloth cost?
2. Harry paid  $\$3\frac{3}{4}$  for a knife,  $\$2\frac{3}{8}$  for a book, and  $\$1\frac{1}{4}$  for a necktie. How much did he pay for all?
3. A grocer sells  $\frac{1}{3}$  of a box of tea from a box  $\frac{3}{4}$  full. What part of the whole box of tea is left?
4. Andrew is 18 yr. old and his sister Jane is  $\frac{5}{8}$  as old. How old is Jane?
5. How many eighths are there in  $6\frac{5}{8}$ ?

Rapidly give the value of:

$\frac{20}{4}$ ;  $\frac{20}{8}$ ;  $\frac{21}{7}$ ;  $\frac{21}{4}$ ;  $\frac{22}{8}$ ;  $\frac{22}{3}$ ;  $\frac{24}{2}$ ;  $\frac{24}{3}$ ;  $\frac{24}{4}$ ;  $\frac{24}{6}$ ;  $\frac{45}{9}$ ;  $\frac{36}{4}$ ;  $\frac{35}{5}$ ;  
 $\frac{20}{5}$ ;  $\frac{36}{6}$ ;  $\frac{40}{8}$ ;  $\frac{42}{7}$ ;  $\frac{36}{9}$ ;  $\frac{20}{8}$ ;  $\frac{63}{9}$ ;  $\frac{34}{2}$ ;  $\frac{56}{8}$ ;  $\frac{30}{5}$ ;  $\frac{54}{9}$ ;  $\frac{56}{7}$ ;  $\frac{20}{6}$ .

6. A boy bought a book for 36 cents, a slate for 20 cents, and a pencil for 4 cents. How much change should he receive from a  $\$1$  bill?
7. How many days are there from May 6 to June 15 inclusive?
8. How many rods are there in  $\frac{1}{2}$  a mile?
9. How many quart bottles can be filled from a vessel holding 3 gal. 3 qt.?

10. At \$.03 a square foot, what is the cost of a board 15 ft. long and 2 ft. wide?

Written.

1. Add:  $24\frac{1}{2}$   
 $85\frac{3}{4}$   
 $62\frac{2}{3}$   
 $70\frac{1}{6}$
2. A miller shoveled  $42\frac{1}{2}$  bu. of corn from a bin containing  $72\frac{1}{2}$  bu. into a bin containing  $29\frac{1}{4}$  bu. How many bushels of corn were there in each bin?

3. I had \$7500. I paid  $\frac{2}{3}$  of it for a house, \$575.60 for repairs, and \$387.75 for furniture. How much had I left?

4. If 1 doz. pairs of gloves cost \$15.25, what will be the cost of 60 pairs? \*

5. A grocer buys 30 doz. eggs at 18 cents per dozen. He sells them at the rate of 15 eggs for 25 cents. How much does he gain or lose?

6. From	$35\frac{1}{2}$	$77\frac{1}{3}$	$56\frac{7}{8}$	$275\frac{3}{8}$
take	$19\frac{3}{4}$	$49\frac{1}{2}$	$25\frac{1}{8}$	$184\frac{1}{2}$

7. Reduce  $81\frac{5}{8}$  to an improper fraction.

8. Reduce  $2\frac{2}{12}$  to a mixed number.

9. A merchant had  $219\frac{3}{4}$  yd. of silk and sold  $98\frac{1}{8}$  yd. for \$.50 a yard, and the remainder for \$.65 a yard. How much did he receive for all?

10. How many square rods are there in a piece of land 30 rd. long and 23 rd. wide?

## VIII

Oral.

Rapidly tell how many halves there are in 8; in 4; in 32; in 16; in 7. Tell how many fourths there are in 8; in 4; in 20; in 15; in 21.

\*60 pairs is how many times 1 doz. pairs?

$$18 - 7, + 6, \times 2 = ? \qquad 20 + 18, - 10, + 7 = ?$$

$$12 \times 6, + 8, + 10, - 5, - 4, + 6, + 6, - 4, + 20 = ?$$

1. Change  $\frac{24}{11}$  to a mixed number.
  2. Change  $\frac{63}{8}$  to a mixed number.
  3. How much will a yard and a half of lace cost at  $\$ \frac{2}{3}$  a yard?
  4. If 5 coats cost \$45, how much will 7 coats cost? \*
  5. I bought a watch for \$18 and sold it for \$25. How much did I gain?
- 

Rapidly tell how many halves there are in 6; in 20; in 5; in 40; in 11. Tell how many thirds there are in 6; in 21; in 14; in 8; in 27. Add  $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$ .  $15 + 20, - 10, + 5, \times 6, + 15, - 20 = ?$   $(8 \times 3) + (6 \times 2) = ?$   $(9 \times 6) + (3 \times 3) = ?$

6. How many cents equal  $1\frac{1}{4}$  dol.?
7. Change  $\frac{22}{8}$  to a mixed number.
8. How many feet are there in 7 yd.?
9. I bought a book for 10 cents and sold it for 12 cents. What part of the cost did I gain?
10. How many fourths are there in  $\frac{1}{2}$ ?

#### Written.

1. Reduce  $25\frac{5}{12}$  to an improper fraction.
2. Reduce  $\frac{556}{8}$  to a whole or a mixed number.
3. What is the area in square feet of a floor 27 ft. by 18 ft.? in square yards?

\* As 7 is  $\frac{7}{5}$  of 5, 7 coats will cost  $\frac{7}{5} \times \$45$ .

4. I have a rectangular room. Its length is 20 ft.; its width, 18 ft.; its height, 12 ft. Find the number of square feet in its four walls.\*

5. A room is 25 ft. long, 20 ft. wide, and 14 ft. high. Find the number of square feet in the four walls.

6. How many square feet are there in the four walls of a room 36 ft. long, 25 ft. wide, and 15 ft. high?

7. How much will it cost to paint the ceiling of the room described in the preceding example at \$.20 a square yard?

8. What is the difference in square feet between 6 sq. ft. and a 6-foot square. (Make a diagram showing the difference.)

9. Reduce  $72\frac{5}{8}$  to an improper fraction.

10. Reduce  $\frac{8714}{12}$  to a whole or a mixed number.

## IX

### Oral.

Rapidly tell how many fourths there are in  $\frac{1}{2}$ ; in  $\frac{1}{4}$ . Tell how many sixths there are in  $\frac{1}{2}$ ; in  $\frac{1}{3}$ ; how many tenths there are in  $\frac{1}{2}$ ; in  $\frac{1}{5}$ ; how many twelfths there are in  $\frac{1}{4}$ ; in  $\frac{1}{2}$ ; in  $\frac{1}{6}$ ; in  $\frac{1}{3}$ .

Rapidly add  $\frac{1}{2}$ ,  $\frac{1}{8}$ ,  $\frac{1}{6}$ . Add  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ . Add  $\frac{1}{2}$ ,  $\frac{1}{6}$ ,  $\frac{1}{10}$ .

1. Show by drawings, or by other means, which is greater,  $\frac{1}{2}$  or  $\frac{1}{4}$ ;  $\frac{1}{2}$  or  $\frac{1}{3}$ ;  $\frac{1}{2}$  or  $\frac{1}{8}$ ;  $\frac{1}{4}$  or  $\frac{1}{8}$ ;  $\frac{1}{8}$  or  $\frac{1}{6}$ ;  $\frac{1}{6}$  or  $\frac{1}{2}$ ;  $\frac{1}{6}$  or  $\frac{1}{2}$ .

2. Jane paid  $\frac{3}{4}$  of a dollar for some ribbon,  $\frac{3}{4}$  of a dollar for a pair of gloves, and  $\frac{1}{2}$  of a dollar for a pair of stockings. How much did she pay for all?

\*The distance around the room (or the perimeter of the base) times the height equals the area of the four walls.

3. Two men own a piece of property together, one owning  $\frac{2}{3}$  of it. What part does the other own?

4. If a bushel of hickory nuts costs 160 cents, how much will 4 qt. cost? \*

5. If 1 gal. of oil costs 90 cents, how much will 3 gal. 2 qt. cost?

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Rapidly find how many thirds there are in  $\frac{2}{3}$ ; in  $\frac{4}{3}$ .

Find how many halves there are in  $\frac{4}{3}$ ;  $\frac{2}{3}$ ;  $\frac{3}{3}$ ;  $\frac{5}{3}$ ;  $\frac{7}{3}$ .

Change to lower terms:  $\frac{6}{8}$ ;  $\frac{9}{12}$ ;  $\frac{10}{20}$ ;  $\frac{8}{12}$ ;  $\frac{9}{24}$ ;  $\frac{10}{16}$ ;  $\frac{15}{20}$ .

How can you change the form of a fraction without altering its value?

6. Change the form, but not the value, of:  $\frac{1}{6}$ ;  $\frac{3}{4}$ ;  $\frac{12}{21}$ ;  $\frac{20}{30}$ ;  $\frac{1}{3}$ ;  $\frac{16}{24}$ ;  $\frac{20}{30}$ ;  $\frac{7}{8}$ ;  $\frac{4}{5}$ ;  $\frac{50}{60}$ ;  $\frac{30}{40}$ ;  $\frac{5}{6}$ ;  $\frac{12}{14}$ ;  $\frac{3}{4}$ ;  $\frac{25}{30}$ .

7. If a pint of molasses costs 7 cents, how much will 1 gal. cost?

8. I bought 2 pk. of cranberries for 96 cents, and sold them for 5 cents a pint. How much did I gain?

9. If a hat costs \$2 $\frac{3}{4}$ , how much will 5 hats cost?

10.  $\frac{4}{5}$  of 20 is how many thirds of 24?

Written.

1. Add: \$150.38

74.06

349.71

8.94

67.08

508.70

2. Reduce to 48ths:  $\frac{5}{12}$ ;  $\frac{9}{16}$ ;  $\frac{7}{8}$ .

3. Reduce to lowest terms:  $\frac{18}{36}$ ;  $\frac{24}{40}$ ;  $\frac{15}{27}$ ;  $\frac{32}{60}$ ;  $\frac{45}{60}$ ;  $\frac{63}{72}$ .

4. Reduce  $65\frac{7}{16}$  to an improper fraction.

5. Reduce  $18\frac{45}{48}$  to a mixed number.

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\* 4 qt. equals what part of a bushel?

6. Add: \$675.84

168.86

10.56

1.32

.96

2.64

84.48

7.757. Reduce  $\frac{4}{5}$  to thirty-fifths;  $\frac{5}{6}$  to sixty-thirds.8. Reduce  $\frac{3}{4}$  to lowest terms;  $\frac{6}{8}$  to lowest terms.

9. A grocer bought 125 bbl. of apples at \$1.40 a barrel. He found that 20 bbl. were damaged. He sold the remainder at \$1.90 a barrel. How much did he gain or lose?

10. How many boxes of eggs, each containing 18 doz. at \$.18 a dozen, would be exchanged for 27 bbl. of oil, each holding 39 gal., at \$.14 a gallon?

## X

Rapidly add:

29 34 23 47 43 54 63 36 71 19 15 45 67 76 71  
17 23 19 25 27 37 29 18 14 13 34 18 13 24 29

Count by 2's from 11 to 103. Count by 3's from 9 to 102. Count alternately by 2's and 3's from 1 to 101; from 3 to 103.

Six is  $\frac{1}{2}$  of what number? 6 is how many times 3? 6 is what part of 12? What is  $\frac{1}{2}$  of 12? What is  $\frac{1}{3}$  of 6?

1. Find the cost of 5 books at \$1.50 each.

2. I paid \$1.44 for 12 books. How many could I have bought for 60 cents?

3. How many days will 7 lb. of butter last, if I use  $\frac{1}{2}$  of a pound a day?

4. Reduce to lowest terms :  $\frac{6}{12}$  ;  $\frac{5}{20}$  ;  $\frac{8}{9}$ .

5. What is a fraction ? What are the principal parts of a fraction ?

Rapidly add:

37	23	47	38	58	69	37	92	83	55	30	53	37	27	49
58	18	35	44	15	23	21	18	46	16	24	31	28	18	15

Count by 4's from 7 to 103. Count by 5's from 3 to 93.

Eight is  $\frac{1}{4}$  of what number ? 8 is how many times 4 ? Find  $\frac{1}{4}$  of 8 ? 8 is how many times 2 ? 4 is what part of 8 ?

6. How much will 8 yd. of silk cost at \$1.50 a yard ?

7. A man had \$.50 and spent \$.27. How much had he left ?

8. If I pay \$.40 for 10 pencils, how much should I pay for 25 such pencils ?

9. At the rate of 25 cents for 3 pairs of stockings, how many pairs can be bought for \$1 ?

10. At \$1.25 a foot, how much will 12 ft. of timber cost ?

Written.

1. Mrs. Smith bought  $35\frac{1}{2}$  yd. of ribbon,  $9\frac{3}{4}$  yd. of lace,  $15\frac{1}{4}$  yd. of braid, and  $9\frac{3}{4}$  yd. of silk. How many yards in all did she buy ?

2. A man earns \$1500 a year. If it costs him \$980 for living expenses, how much money will he save in 7 yr. ?

3. How much will  $97\frac{3}{4}$  yd. of ribbon cost at \$.86 a yard ?

4. Find  $\frac{2}{5}$  of 98,075.

5. From  $87,562\frac{1}{4}$  take  $3869\frac{3}{4}$ .

6. There were  $21\frac{2}{3}$  lb. of meal in one bag,  $13\frac{3}{4}$  lb. in another,  $16\frac{1}{2}$  lb. in another, and  $15\frac{1}{2}$  lb. in another. How many pounds were there in all the bags?

7. A man bought a farm for \$3700; he sold it at a loss of \$350. What was the selling price?

8. If 9 houses cost \$63,819, how much will one cost?

9. Find the total value of  $\frac{3}{4}$  of a barrel of flour at \$8 a barrel and 35 lb. of tea at \$.60 a pound.

10. From  $325,678\frac{1}{2}$  take  $42,679\frac{3}{4}$ .

## XI

### Oral.

Rapidly subtract :

45	45	92	92	83	22	55	30	37	53	44	85	63	95	95
<u>80</u>	<u>36</u>	<u>10</u>	<u>18</u>	<u>46</u>	<u>18</u>	<u>10</u>	<u>24</u>	<u>28</u>	<u>24</u>	<u>16</u>	<u>56</u>	<u>29</u>	<u>40</u>	<u>46</u>

Count by 6's from 8 to 110. Count by 7's from 9 to 100.

1. Separate into two factors: 32; 48; 27; 49; 36; 24; 18; 21; 20; 25; 40; 28.

2. If 9 oranges in a dozen are bad, what part of the dozen is bad?

3. 18 is  $\frac{2}{3}$  of what number? 49 is  $\frac{7}{8}$  of what number?

4. Eight ninths of 27 is  $\frac{4}{9}$  of what number?

5. James paid 56 cents for a pair of skates, which was  $\frac{4}{5}$  of what he paid for a sled. How much did his sled cost him?

Rapidly subtract :

83	43	53	63	17	27	37	47	28	38	39	59	24	34	44
<u>18</u>	<u>15</u>	<u>12</u>	<u>13</u>	<u>11</u>	<u>18</u>	<u>19</u>	<u>15</u>	<u>7</u>	<u>13</u>	<u>15</u>	<u>14</u>	<u>19</u>	<u>17</u>	<u>21</u>

Count by 8's from 5 to 101. Count by 9's from 2 to 92.



6. Write a fraction whose numerator is 24, and whose denominator is 9. What kind of a fraction is it?

7. What is the denominator of any fraction? What is the numerator of any fraction?

8. What does the expression  $\frac{1}{8}^2$  mean? What is the value of it (or the quotient, after performing the division)?

9. At \$1.25 each, how much will 9 neckties cost?

10. How many yards of fence will inclose a plot  $5 \times 9$  ft.?

**Written.**

1. A man who had \$1500 spent  $\frac{2}{5}$  of it. How much had he left?

2. 72 is what part of 84?

3. \$3600 is  $\frac{1}{18}$  of all my money. How much money have I?

4. How many cubic feet of earth must be removed in digging a cellar 37 ft. long, 27 ft. wide, and 7 ft. deep? how many cubic yards?

5. Multiply 87,605 by 809. Prove the answer.

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6. If a man can walk 531 mi. in 27 da., how far at the same rate can he walk in 36 da.?

7. Butter is worth \$.24 a pound, and I bought \$5.52 worth of it to-day. How many pounds did I buy?

8. If  $\frac{1}{3}$  of a yard costs \$1.75, how much will the whole yard cost?

9. 925 is  $\frac{1}{6}$  of what number?

10. Multiply 96,008 by 8054. Prove the answer.

## XII

## Oral.

Rapidly multiply by 10:

87; 63; 7; 1.25; 84; 72; 325; \$1.50; 15; 150; 27; 5; 9; 320; 64; \$1.75; \$2.50; 3.75; 50.

1. How much will ten pencils cost at \$.05 each? 10 at \$.08 each?

2. If 1 pk. of pears costs  $\$ \frac{1}{2}$ , how much will 2 bu. cost?

3. How much will 16 peaches cost at  $1\frac{3}{4}$ ¢ apiece?

4. 12 in. is what part of a yard?

5. If 9 apples cost 15 cents, how much will 3 apples cost?

Rapidly multiply:

27	35	45	25	16	25	17	19	25	25	14	17	15	16	13
<u>2</u>	<u>3</u>	<u>10</u>	<u>4</u>	<u>10</u>	<u>3</u>	<u>2</u>	<u>3</u>	<u>2</u>	<u>10</u>	<u>3</u>	<u>5</u>	<u>5</u>	<u>4</u>	<u>3</u>

Rapidly divide:

$3\overline{)27}$ ;  $10\overline{)40}$ ;  $10\overline{)50}$ ;  $4\overline{)28}$ ;  $5\overline{)35}$ ;  $6\overline{)42}$ ;  $10\overline{)60}$ ;  $10\overline{)80}$ .

6. If I can buy 4 bananas for 15 cents, how much at that rate must I pay for a dozen?

7. Reduce  $3\frac{1}{2}$  ft. to inches.

8. I paid 21 cents for 3 qt. of nuts. How many quarts could I have bought for 35 cents?

9. Two feet is what part of a yard?

10. How many thirds are there in  $6\frac{2}{3}$ ?

## Written.

1. When 7 T. of coal cost \$43.40, how much will 21 T. cost?

2. Add 9,001,730, 803,521, 6,032,201, 758,962, 45,782, 678,576, and 5,834,782.

3. Name the periods in each number in the preceding example. How many orders may a period have? Name the orders.

4. Write as dollars and cents, and add  $\$75\frac{1}{2}$ ,  $\$672\frac{3}{4}$ ,  $\$87\frac{1}{2}$ ,  $\$562\frac{1}{4}$ ,  $\$876\frac{1}{8}$ ,  $\$924\frac{3}{8}$ , and  $\$34\frac{1}{8}$ .

5. Divide 89,990 by 489. Prove the answer.

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6. If the wheels of a wagon turn 480 times in going a mile, how many times will they turn in going 10,560 ft. ? 4400 ft. ?

7. A man sold 54 A., which was  $\frac{1}{6}$  of his farm. How many acres remained ?

8. Divide 8008 by 26. Prove the answer.

9. How many square feet are there in a walk 125 ft. long and  $1\frac{1}{2}$  yd. wide ?

10. How many square yards of carpeting will it take for a room 27 ft. long and 18 ft. wide ?

### XIII

#### Oral.

Rapidly answer the following :

What part of \$1 is 1 dime? Express 1 dime in two other ways. What part of \$1 is 1 cent? Express 1 cent in two other ways. Tell how 3 dimes may be written; 30 cents; 3 cents. What is the mark called that separates dollars from dimes or tenths of a dollar? What part of a dollar is a mill? How are 3 mills written as thousandths?

Read: .3 as dimes, as tenths; .03 as cents, as hundredths; .003 as mills, as thousandths.

Read: \$.50; .50; \$5.60; 5.60; \$.75; .75; \$.625; .625.

What is the other name for dimes? for cents? for mills?

1.  $\$ \frac{1}{2}$  equals how many tenths of a dollar?

2. Read: .1; .2; .02; .07; 1.01; .10; .20; .23; .63; .007.

3. Read as tenths: 8; 6; 7; 5; 4; 3; 2; 9.

4. Read as hundredths: 6; 4; 7; 65; 82; 74; 3; 9.

5.  $.4 + .2 = ?$   $.3 + .5 = ?$   $.2 + .3 = ?$   $\frac{4}{10} + \frac{2}{10} = ?$   $\frac{3}{10} + \frac{5}{10} = ?$   $\frac{2}{10} + \frac{3}{10} = ?$   $\frac{3}{10} + \frac{5}{10} = ?$  (Write the answers in two forms.)

6. James paid \$.10 for carfare, \$.21 for his lunch, and \$.40 for some candy. How much did he spend?

7. Using the decimal point, express:  $\frac{6}{10}$ ;  $\frac{4}{100}$ ;  $\frac{7}{10}$ ;  $\frac{3}{10}$ ;  $\frac{6}{100}$ ;  $\frac{25}{100}$ ;  $\frac{8}{10}$ ;  $\frac{2}{100}$ ;  $\frac{6}{10}$ ;  $\frac{15}{100}$ .

8. Read: 2.3; 12.8; 25.03; .07; .008; .65; 2.56; 3.25.

9. Sarah gave the grocer 2 dimes to pay for 12 cents' worth of sugar. How many cents did he give her back?

10. From a quarter take a dime and a nickel.

### Written.

1. Write and add 6 hundredths, 4 tenths, 3 tenths, 67 hundredths, 45 hundredths, 3 tenths, 7 tenths.

2. From \$87.67 take \$35.98. From \$25.38 take \$15.27.

3. A boy bought a bicycle for \$10.57 and sold it for \$8.25. How much did he lose?

4. Which has the greater value, 35 lb. of tea at \$.70 a pound, or 16 yd. of cloth at \$1.75 a yard? What is the difference in the cost of the tea and the cloth?

5. How much will it cost to fence a garden 10 rd. long and 6 rd. wide at \$1 a rod?

6. Add: \$325 $\frac{1}{2}$

678 $\frac{3}{8}$

48.72

352 $\frac{1}{4}$

65 $\frac{1}{8}$

264.67

7. How many 6-in. cubes can be cut from a block of marble 2 ft. long, 1 ft. wide, and 1 ft. thick?

8. Reduce  $\frac{35}{125}$  to lowest terms.

9. How many eighths are there in 9 $\frac{3}{8}$ ? in 6 $\frac{1}{4}$ ? in 10 $\frac{3}{8}$ ?

10. Reduce to mixed numbers:  $\frac{120}{20}$ ;  $\frac{104}{25}$ ;  $\frac{122}{11}$ .

#### XIV

##### Oral.

Express orally in decimal form (as in the note):

$\frac{2}{100}$ \*;  $\frac{2}{10}$ ;  $\frac{24}{100}$ ;  $\frac{4}{100}$ ;  $\frac{42}{100}$ ;  $\frac{125}{1000}$ ;  $\frac{14}{100}$ ;  $\frac{20}{100}$ ;  $\frac{7}{1000}$ ;  $\frac{22}{1000}$ .

The denominator is 100, the numerator 5. How should the decimal be written? †

The denominator is 1000, the numerator 26. How should the decimal be written?

The denominator is 100, the numerator 15. How should the decimal be written?

\*  $\frac{2}{100}$  is to be read: "The numerator is 2, the denominator 100; the decimal is expressed by a decimal point, cipher, nine, and is read nine hundredths."

† The decimal should be written decimal point, cipher, five; and be read five hundredths.

The denominator is 100, the numerator 8. How should the decimal be written?

Read: .7; .07; .77; .007; .077; .777; .027; .037; .6; .008; .67; 5.5.

1. Add .2 and .7; .3, .4, and .2; .3 and .1; .2, .4, and .3; .6, .2, and .1.

2. At 50 cents a pair, how much are 14 pairs of gloves worth?

3. Robert walked  $\frac{5}{8}$  mi. in the morning and  $1\frac{1}{2}$  mi. in the afternoon. How far did he walk all together?

4. How many square feet are there in a 6-ft. square? in a 7-foot square?

5. There are 84 sq. in. in a sheet of paper 8 in. wide. How long is the paper?

Express orally in decimal form:

$\frac{8}{10}$ ;  $\frac{75}{100}$ ;  $\frac{25}{100}$ ;  $\frac{6}{10}$ ;  $\frac{25}{100}$ ;  $\frac{6}{100}$ ;  $\frac{86}{1000}$ ;  $\frac{15}{100}$ ;  $\frac{8}{100}$ ;  $\frac{85}{1000}$ .

The denominator is 100, the numerator 20. How should you write the decimal?

The denominator is 10, the numerator 6. How should you write the decimal?

The denominator is 1000, the numerator 17. How should you write the decimal?

Read: .087; .62; .625; .012; .8; .80; .800; 4.5; 12.5; .36; .036.

Read and add: .3 and .6; .4, .4, and .1; .2, .2, .3, and .1; .2, .5, .2; .3, .3, and .3.

6. What is the length in inches of one side of a picture in the form of a square containing 81 sq. in.?

7. How many square feet are there in a city lot (25 ft. by 100 ft.)?

8. Reduce  $\frac{17}{2}$  to a mixed number.

9. At \$1.25 each, how much will 8 hats cost?

10. How many feet of rubber tubing will be needed for two gas stoves, if each one requires 54 in.?

**Written.**

1. Multiply 903 by 467.

2. Divide \$96.72 by 403. Prove the answer.

3. My room is 21 ft. long and 18 ft. wide. I have a rug in the center which covers 108 sq. ft. How many square feet of the room are not covered by the rug? (Make a drawing to illustrate the example.)

4. How much will 8 city lots (25 ft. by 100 ft.) cost at \$1.50 a square foot?

5. A woman had  $\frac{7}{8}$  of 168 yd. of ribbon, and her daughter had  $\frac{3}{4}$  of 176 yd. Which had the more yards, and how many more had she than the other?

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6. Multiply \$71.40 by 304.

7. From  $8000\frac{5}{12}$  subtract  $95\frac{1}{2}$ . Prove the answer.

8. How much will it cost to cover a floor 18 ft. square with matting a yard wide at \$.75 a yard?

9. How many square rods are there in a field 100 rd. long and 16 rd. wide? How many acres are there in the field?

10. If  $2\frac{2}{3}$  doz. hats cost \$80, what will be the cost of 3 hats?

## XV

## Oral.

What must the denominator of a decimal fraction be?

Why are  $\frac{8}{10}$ ,  $\frac{8}{100}$ , and  $\frac{8}{1000}$  called decimal fractions?

Write each in another form.

Rapidly add:

5.1	3.7	4.5	$6\frac{2}{10}$	$7\frac{3}{10}$	6.5	1.3	7.0	$10\frac{1}{10}$	3.7	5.0
4.3	5.2	3.3	$8\frac{3}{10}$	$8\frac{4}{10}$	3.4	2.2	4.5	7.4	$8\frac{2}{10}$	3.5

1. James had \$.20, his brother \$.50, and his sister \$.30. How much had they all together?

2. Reduce to lowest terms:  $\frac{12}{18}$ ;  $\frac{10}{12}$ ;  $\frac{8}{15}$ ;  $\frac{4}{20}$ ;  $\frac{6}{8}$ .

3. At \$.75 a pound, how much tea can be bought for \$1?

4. I paid \$16 for coffee at 25 cents a pound. How many pounds did I buy?

5. If eggs are sold at the rate of 12 for 25 cents, how much will 4 doz. cost? \_\_\_\_\_

From	8.5	9.8	2.4	\$1.00	\$1.25	3.5	6.3	\$1.30
take	<u>6.3</u>	<u>7.5</u>	<u>1.6</u>	<u>.83</u>	<u>.87</u>	<u>2.8</u>	<u>2.7</u>	<u>.75</u>

From	8.5	5.6	9.2	\$5.00	\$4.25	4.9	8.4	\$2.00
take	<u>1.8</u>	<u>3.2</u>	<u>6.8</u>	<u>1.25</u>	<u>.75</u>	<u>7.5</u>	<u>5.8</u>	<u>1.87</u>

What separates the whole number from the decimal fraction in a number composed of a whole number and a decimal?

Name the first place to the right of a decimal point; to the left of a decimal point.

Name the second place to the right of a decimal point; to the left of a decimal point.



Name the third place to the right of a decimal point; to the left of a decimal point.

Name the three places in their order to the right of a decimal point; to the left of a decimal point:

6. At \$.05 a quart, how many pecks can I buy for \$.40?
7. I gave  $\frac{1}{3}$  of a kite string to John and  $\frac{1}{6}$  to James. How much of the kite string did I keep?
8. If 1 pt. of milk costs 4 cents, how much will 1 gal. cost?
9.  $\frac{1}{3}$  of an oblong piece of paper contains 12 sq. in. If one side is 4 in., how long is the other side?
10. How many cubic feet are there in a box 3 ft. by 5 ft. by 2 ft.?

**Written.**

1. Add  $657\frac{1}{3}$ ,  $49\frac{3}{4}$ ,  $823\frac{2}{3}$ ,  $8\frac{1}{8}$ ,  $95\frac{1}{4}$ , and  $672\frac{1}{2}$ .
2. Divide 69,795 by 705. Prove the answer.
3. How much Japanese straw matting will it take to cover a box 4 ft. long, 2 ft. wide, and 1 ft. high? (Explain it by reference to a drawing.)
4. Two men started from Poughkeepsie and walked in opposite directions. One traveled  $18\frac{3}{4}$  mi. and the other  $14\frac{3}{4}$  mi. a day. How far apart were they at the end of the third day? (Make a diagram showing the distance traveled.)
5. What is the cost of 75 lb. of walnuts at  $\$ \frac{1}{2}$  a pound and 276 baskets of apples at  $\$ \frac{3}{4}$  a basket?
6. A man had 150 bu. of oats and sold  $\frac{1}{3}$  of them at  $\$.87\frac{1}{2}$  a bushel and the remainder at \$.65 a bushel. How much did he receive for all?

7. A piece of cloth contains 132 yd. ;  $\frac{1}{2}$  is sold at one time and 22 yd. at another. How many yards remain?

8. How much will 126 lb. of beef cost at  $9\frac{1}{4}$  cents a pound?

9. How much must be added to  $709\frac{3}{4}$  to make  $8302\frac{3}{4}$ ?

10. A man owns a rectangular piece of land that measures 3704 ft. by 1576 ft. How many miles of fence will inclose it?

## XVI

### Oral.

Beginning with 4, then with 5, then with 6, count by 8's within 100.

Beginning with 1, then with 2, then with 3, count by 9's within 100.

1.  $19.3 - 8.1 = ?$   $8.25 - .12 = ?$

2. Reduce  $9\frac{3}{8}$  to a mixed number.

3. How many months are there in  $8\frac{2}{3}$  yr.?

4. How much will 16 hats cost at \$1.25 each?

5. How many fifty-sixths are there in  $\frac{5}{8}$ ?

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Beginning with 4, then with 5, then with 6, count by 9's within 100.

Beginning with 3, then with 4, then with 5, count by 7's within 100.

6. Reduce  $\frac{40}{4}$  to a mixed number.

7. A farmer sold 56 oxen out of a total of 121. How many were left?

8. Reduce  $\frac{5}{8}$  to lowest terms.
9. How many inches around does a frame 4 ft. by 3 ft. measure?
10. At  $12\frac{1}{2}$  cents a yard, how much will 32 yd. of ribbon cost?

**Written.**

- |   |   |
|---|---|
| <p>1. Add: 45,862<br/>76,954<br/>67,673<br/>98,746<br/>89,538<br/>34,267<br/>52,385<br/><u>23,989</u></p> | <p>2. Reduce to lowest terms: <math>\frac{1}{2}</math>; <math>\frac{2}{3}</math>; <math>\frac{3}{4}</math>; <math>\frac{4}{5}</math>; <math>\frac{5}{6}</math>.</p> <p>3. Reduce <math>\frac{2}{3}</math> to 15ths; <math>\frac{3}{4}</math> to 27ths; <math>\frac{1}{5}</math> to 56ths.</p> <p>4. In a grove of 64 trees, <math>\frac{1}{4}</math> of the trees are blown down and <math>\frac{1}{2}</math> of the remainder die. How many are left?</p> <p>5. A trader sold a horse for \$125<math>\frac{3}{10}</math>, by which he gained \$10<math>\frac{1}{2}</math>. How much would he have gained had he sold it for \$140<math>\frac{3}{4}</math>?</p> |
|---|---|
- 
- |  |   |
|--|---|
| <p>6. Add: \$30,402.55<br/>286.09<br/>5,304.62<br/>20,463.20<br/>607.05<br/>6,315.46<br/>73.90<br/><u>2,461.59</u></p> | <p>7. Reduce <math>27\frac{2}{3}</math> to a mixed number.</p> <p>8. Reduce <math>45\frac{1}{2}</math> to an improper fraction.</p> <p>9. From a barrel of flour there were taken at one time 50<math>\frac{1}{2}</math> lb., and at another 45<math>\frac{3}{4}</math> lb. How many pounds remained in the barrel?</p> <p>10. By selling a carriage for \$178, I lost \$27. How much did the carriage cost me?</p> |
|--|---|

## XVII

Oral.

Rapidly give the answers :

$6 \times 5 = ?$	$30 + 6 = ?$	$16 + 42 = ?$	$15 - 8 = ?$
$8 \times 7 = ?$	$56 + 8 = ?$	$45 + 34 = ?$	$16 - 7 = ?$
$11 \times 4 = ?$	$44 + 11 = ?$	$52 + 36 = ?$	$12 - 4 = ?$
$4 \times 9 = ?$	$36 + 4 = ?$	$35 + 21 = ?$	$15 - 6 = ?$
$10 \times 4 = ?$	$40 + 10 = ?$	$62 + 27 = ?$	$13 - 9 = ?$
$7 \times 7 = ?$	$49 + 7 = ?$	$71 + 18 = ?$	$17 - 8 = ?$
$5 \times 4 = ?$	$20 + 5 = ?$	$34 + 28 = ?$	$13 - 6 = ?$
$9 \times 2 = ?$	$18 + 9 = ?$	$26 + 47 = ?$	$16 - 9 = ?$
$6 \times 6 = ?$	$36 + 6 = ?$	$58 + 35 = ?$	$18 - 7 = ?$
$3 \times 5 = ?$	$15 + 3 = ?$	$45 + 35 = ?$	$21 - 8 = ?$

1. Read the following numbers: XII; XXIV; XXVII; XIII; XLIV; LXI; LXX; DVI; MDCC; CCLIV.

2. If 7 T. of coal cost \$22, how much will 21 T. cost?

3. If 18 pigs cost \$30, how much must be paid for 9 pigs?

4. How many thirds are there in  $8\frac{2}{3}$ ?

5. John gave  $\frac{3}{10}$  of his apples to David and  $\frac{2}{5}$  to Jacob. What part of his apples had he left?

Rapidly add :

4	1	5	5	5	3	3	7	4	4	2	5	2	9	9	4	5	8	5	7
2	5	4	3	2	4	8	2	8	7	6	8	7	7	4	7	8	6	7	6
3	4	2	4	6	7	3	6	4	5	9	4	9	3	7	8	5	5	8	8
<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>

6. Express the following in Roman notation: 503; 618; 410; 4675; 1463; 515; 735; 1171; 1060; 3101; 215; 342.

7. How much will 15 oranges cost, if 3 oranges cost 8 cents?

8. Reduce  $\frac{75}{8}$  to a mixed number.

9. Reduce  $\frac{1}{3}\frac{2}{7}$  to its lowest terms.

10. A pole stands  $\frac{1}{3}$  in mud,  $\frac{1}{6}$  in water, and the remainder of the pole is in the air. What part of the pole is in the air? (Make an illustrative drawing.)

**Written.**

1. How many feet are there in  $5\frac{1}{2}$  mi.?

2. A invested \$1790 in grain, and B invested 9 times as much. How much did they both invest?

3. A tub of butter weighed  $63\frac{1}{4}$  lb., the weight of the tub alone being  $4\frac{5}{8}$  lb. What was the weight of the butter?

4. Mr. Jones owns  $\frac{3}{8}$  of a farm valued at \$13,465. What is the value of his share of the farm?

5. In 5 piles of wood there are, respectively, 4.418 cd., 6.216 cd.,  $7\frac{1}{8}$  cd.,  $9\frac{1}{4}$  cd., and  $10\frac{3}{8}$  cd. How many cords are there in all?

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6. A grocer sold 6 lb. of rice at  $7\frac{1}{2}$  cents a pound,  $24\frac{1}{2}$  lb. of lard at 5 cents a pound,  $8\frac{3}{4}$  lb. of butter at 20 cents a pound, and 25 lb. of sugar at  $6\frac{1}{2}$  cents a pound. How much did he receive for all the groceries sold?

7. A dealer bought flour to the amount of \$3647.38 and sold it for \$5000. How much did he gain?

8. Reduce  $17\frac{33}{8}$  to a mixed number.

9. Reduce  $1\frac{33}{48}$  to lowest terms.

10. How many pecks are there in 1952 qt.?

## XVIII

## Oral.

Rapidly add :

9	8	8	6	6	8	2	5	3	3	6	8	2	3	5	7	5	8	6	4
7	7	6	8	4	3	6	4	5	6	3	2	2	1	2	2	9	7	4	9
8	6	8	6	8	6	9	7	9	9	6	4	9	9	5	6	6	7	9	4

The denominator is 1000, the numerator 15. Express the decimal orally.

Express the following decimals orally: Denominator 100, numerator 27; denominator 1000, numerator 17; denominator 10, numerator 8.

1.  $\frac{1}{8}$  equals how many hundredths?
2. If 12 in. equal  $\frac{1}{4}$  of the height of a pole, how high is the pole?
3. At  $16\frac{3}{4}$  cents a pound, how much will 36 lb. cost?
4. How many quarters of a dollar are there in a twenty-dollar bill?
5. Reduce  $\frac{49}{8}$  to lowest terms.

Rapidly answer :

$5 \times 10 = ?$	$80 + 10 = ?$	$45 + 21 = ?$	$18 - 8 = ?$
$8 \times 5 = ?$	$14 + 2 = ?$	$76 + 34 = ?$	$15 - 9 = ?$
$9 \times 3 = ?$	$72 + 9 = ?$	$74 + 45 = ?$	$16 - 5 = ?$
$6 \times 7 = ?$	$14 + 7 = ?$	$68 + 34 = ?$	$15 - 7 = ?$
$11 \times 5 = ?$	$30 + 3 = ?$	$46 + 52 = ?$	$17 - 8 = ?$
$5 \times 6 = ?$	$22 + 11 = ?$	$15 + 17 = ?$	$19 - 9 = ?$
$10 \times 8 = ?$	$32 + 8 = ?$	$24 + 23 = ?$	$14 - 9 = ?$
$7 \times 2 = ?$	$63 + 7 = ?$	$16 + 18 = ?$	$14 - 6 = ?$
$9 \times 8 = ?$	$20 + 10 = ?$	$23 + 24 = ?$	$19 - 7 = ?$
$2 \times 7 = ?$	$33 + 3 = ?$	$44 + 25 = ?$	$20 - 9 = ?$

6. Reduce  $\frac{3}{8}$  to lowest terms.
7. If \$24 is  $\frac{1}{4}$  of my money, how much money have I?
8. Reduce  $\frac{5}{8}$  to 48ths.
9. How many yards are there in 48 ft.?
10. How many hundredths are there in  $\frac{3}{8}$ ? How many thousandths are there in  $\frac{3}{8}$ ?

**Written.**

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. Add:     34,651<br/>              42,764<br/>              51,628<br/>              34,873<br/>              76,482<br/>              <u>32,765</u></li> </ol> | <ol style="list-style-type: none"> <li>2. What is the total cost of 6<math>\frac{1}{4}</math> lb. of mackerel at 16 cents a pound, 3<math>\frac{1}{4}</math> lb. of codfish at 12 cents a pound, and 4 cans of salmon at the rate of 2 for a quarter?</li> </ol> |
|--|--|
3. A merchant bought 24 $\frac{3}{4}$  yd. of ribbon for 24 cents a yard and 18 $\frac{1}{4}$  yd. for 36 cents a yard. He sold all for 56 cents a yard. How much did he gain?
  4. From a barrel of flour there were taken at one time 20 $\frac{7}{8}$  lb. and at another 95 $\frac{3}{4}$  lb. How many pounds remained in the barrel?
  5. From the sum of ninety-seven dollars fourteen cents and fourteen dollars seventy cents, subtract one hundred dollars ten cents.
- 
6. Express 43,763 in. as yards, feet, and inches.
  7. To  $\frac{3}{4}$  of 324 add  $\frac{5}{8}$  of 432.
  8. Mr. Brown owned 3175 $\frac{5}{12}$  A. of land. He sold 576 $\frac{5}{8}$  A. How many acres had he left?
  9. Reduce 375 $\frac{11}{14}$  to an improper fraction.
  10. How many acres are there in a field 14  $\times$  16 rd.?

## XIX

## Oral.

Rapidly find :

$\frac{1}{3}$  of 24; of 27; of 54; of 13; of 12; of 36; of 39; of 15; of 17.

How many thirds are there in 6? in 8? in 24? in 12? in 15? in 17? in 20? in 21?

Add by 6's from 4 to 100. Add by 8's from 2 to 106.

Subtract by 5's from 60 to 0. Subtract by 6's from 72 to 6.

1. I had 60 pencils and sold  $\frac{5}{6}$  of them. How many did I sell? How many had I left?

2. A woman bought  $\frac{5}{8}$  of 24 yd. of ribbon and her daughter bought  $\frac{4}{5}$  of 25 yd. Which had the greater number of yards? What was the difference in yards?

3. Reduce  $5\frac{3}{4}$  to an improper fraction.

4. If rice is bought for  $11\frac{1}{4}$  cents a pound and sold for 14 cents a pound, how much a pound is gained?

5. How much change shall I get from \$1, if I buy  $2\frac{1}{2}$  lb. of tea at 40 cents a pound?

Rapidly find :

$\frac{1}{4}$  of 8; of 6; of 24; of 21; of 16; of 48; of 27; of 32; of 36.

How many fourths are there in 4? in 8? in 6? in 21? in 20? in 12? in 16? in 13?

Add by 7's from 2 to 98. Add by 8's from 5 to 101.

Subtract by 7's from 84 to 0. Subtract by 8's from 96 to 8.

6. If  $\frac{1}{4}$  of a yard of cloth costs 15 cents, how much will  $\frac{3}{4}$  of a yard cost? (Compare  $\frac{1}{4}$  and  $\frac{3}{4}$ .)



7. A man spent \$20, which was  $\frac{5}{8}$  of his money. How much money had he at first?
8. How many hours are there in  $\frac{3}{4}$  of a day?
9. 18 hr. equals what part of a day?
10. When tea is 80 cents a pound, what part of a pound can be bought for 60 cents?

**Written.**

1. A ship that cost \$35,742 was sold for \$40,000. What was the gain?
2. George Washington was born in 1732 and died in 1799. How old was he when he died? How many years is it since he died?
3. John went to a store and bought 28 lb. of sugar at 5 cents a pound; 3 lb. of butter at 26 cents a pound; 5 doz. eggs at 37 cents a dozen; 7 lb. of oatmeal at 5 cents a pound. He gave the clerk a ten-dollar bill. How much in change was returned to him?
4. A teacher's salary was \$100 a month. Her expenses per week averaged \$19.35. How much did she save in the month of February, 1910 if she drew full salary that month?
5. Reduce  $214\frac{7}{11}$  to an improper fraction.
6. Reduce  $5\frac{345}{2}$  to a mixed number.
7. Reduce  $\frac{124}{38}$  to lowest terms.
8. A farmer sold at one time 2.35 T. of grain, at another time 11.80 T., at another time 4.05 T., at another time 6.75 T. How many tons of grain in all did he sell?

9. How long is a room the floor of which is 8 ft. wide and which measures 16 sq. yd.? (Make a drawing to represent the floor.)

10. A rectangular floor which requires 30 sq. yd. of carpeting to cover it, is 18 ft. long. How wide is the floor?

**XX****Oral.**

Rapidly add:

54	36	43	45	64	32	18	92	75	65	87	19	13	18	42
7	3	5	4	3	2	1	2	2	3	2	1	5	9	4
2	8	4	1	3	1	8	7	8	2	2	1	5	9	3

1. Reduce  $\frac{40}{88}$  to lowest terms.
2. Reduce  $\frac{100}{8}$  to a mixed number.
3. How many inches around does a sheet of paper 8 in. by 12 in. measure?
4. I bought 3 yd. of lace. How many inches did I buy?
5. How many inches are there in  $\frac{1}{8}$  of a yard plus  $\frac{1}{8}$  of a yard?

Rapidly add:

47	9	9	9	11	13	15	16	15	11	6	7	11	15	17
4	1	2	3	4	3	5	7	6	8	9	7	9	8	9
8	3	4	6	5	7	2	3	4	6	1	7	8	1	8

6. Reduce  $6\frac{5}{8}$  to an improper fraction.
7. How many cubic feet does a box  $3 \times 2 \times 1$  ft. measure?
8. How many square inches are there in a piece of paper  $8 \times 11\frac{1}{2}$  in.?

9. How many sheep can I buy for \$60, if 6 cost \$30?
10. At  $12\frac{1}{2}$  cents a yard, how much will 2 doz. yd. of ribbon cost?

**Written.**

1. Divide 714,326 by 89. Prove the answer.
2. Multiply 70,405 by 304. Prove the answer.
3. A dealer bought wheat at 94 cents a bushel to the amount of \$59.22 and sold it for \$69.30. What was the selling price per bushel?
4. A man sold a horse for \$125, and received in payment  $12\frac{1}{2}$  yd. of cloth at \$3.25 a yard and the remainder in tea at  $62\frac{1}{2}$  cents a pound. How many pounds of tea did he receive?
5. A man had \$8750. He paid  $\frac{2}{5}$  of it for a home, \$375.60 for repairs, and \$985.75 for furniture. How much money had he left? \_\_\_\_\_
6. A man earns \$1.75 every week day, and his expenses are \$8.50 a week. At that rate, how many weeks will it take him to save \$50?
7. Write in a column and add \$8.75, \$65.06, \$109.63, \$758.28, \$3.82, \$59, \$3.89, \$.84, \$785.90, \$34.86, \$76.83, \$7.06, \$5.69, and \$1096.15.
8. To how many persons do I give 160 gal. of milk, if I give 2 qt. to each person?
9. How much will  $96\frac{1}{2}$  bu. of potatoes cost at 30 cents a peck?
10. How much will it cost to carpet a room 21 ft.  $\times$  18 ft. with plain carpet 1 yd. wide, if the carpet costs \$1.50 a yard?

## SECOND MONTH

**RAPID DRILLS**—daily. The fundamental operations continued with larger numbers. Examples to be given for quickness and accuracy. In multiplication and division use 10, 80, 90, etc., as multipliers and divisors.

**READING AND WRITING NUMBERS** in orders to 100,000,000.

**FRACTIONS.** Reduction, addition, subtraction, and multiplication.

**DECIMALS.** Reading and writing; reduction to common fractions of easy decimal fractions and vice versa. Addition and subtraction after reduction to common denominator.

**MEASUREMENTS.** Estimate dimensions of rooms, boxes, desks, etc., using linear measure and square measure; also cubic measure.

**TABLES.** Teach time table in addition to those taught first month.

**PROBLEMS.** Involving cost of articles at \$.50 ( $\frac{1}{2}$ ), \$.25 ( $\frac{1}{4}$ ), \$1.50 ( $1\frac{1}{2}$ ), and many of the other business fractions. Also problems in the weights and measures and three of the four type problems:

First, finding parts of numbers ( $\frac{1}{8}$  of 64).

Second, finding what part one number is of another (8 is what part of 64?).

Third, finding a number when a part is given (8 is  $\frac{1}{8}$  of what number?).

## XXI

**Oral.**

Rapidly answer:

How many are 10 times 4? 10 times 5? 10 times 6? 10 times 7?

What must be annexed to 4 to make it 40? to 5 to make it 50? to 6 to make it 60? to 7 to make it 70?

What must be annexed to a number when it is multiplied by 10? What is 10 times 11? 10 times 12? 10 times 13? 10 times 15? 10 times 17? 10 times 19? 10 times 20?

Give the products:  $247 \times 10$ ;  $315 \times 10$ ;  $562 \times 10$ ;  $489 \times 10$ ;  $576 \times 10$ .

1. I paid \$345 for one acre of land. How much must I pay for 10 A.?

2. If 12 yd. of muslin cost 66 cents, how much would 4 yd. cost?

3. A boy goes to bed at 8.30 o'clock in the evening and gets up at 7 the next morning. How many hours and minutes has he been in bed?

4. If a man gives  $\frac{3}{8}$  of a day to work,  $\frac{1}{8}$  of a day to sleep, and spends  $2\frac{1}{2}$  hr. every day reading, how many hours and minutes are left for other purposes?

5. How many days are there in the spring months together (March, April, May)?

Rapidly answer:

Find 10 times 30; 10 times 50; 10 times 100; 10 times 10; 10 times 60; 10 times 21; 10 times 36.

At sight give the products:  $325 \times 10$ ;  $456 \times 10$ ;  $325 \times 10$ ;  $650 \times 10$ ;  $720 \times 10$ ;  $652 \times 10$ .

$14 \times 10$ ,  $+ 2$ ,  $+ 7$ ,  $+ 11$ ,  $+ 5$ ,  $\times 6 = ?$   $12 \times 10$ ,  $+ 6$ ,  $\times 3$ ,  $+ 5$ ,  $+ 8$ ,  $+ 5$ ,  $+ 5 \times 10 = ?$

6. A farm of 75 A. is worth \$560 an acre. How much are 10 A. worth?

7. How much will  $8\frac{3}{4}$  gal. of milk cost at 9 cents a quart?

8. To how many persons can I give 3 bu. of corn, if I give to each person 3 pk.?

9. Kate bought  $\frac{1}{2}$  of a pound of tea in one store and 2 oz. in another. What part of a pound did she buy all together?

10. How many days are there in the autumn months together (September, October, November)?

### Written.

Multiply 736 by 60.

$$\begin{array}{r} 736 \\ 60 \\ \hline 44160 \end{array}$$

Since 60 is equal to 10 times 6, we first multiply 736 by 6, giving a product of 4416, and this result we multiply by 10 by annexing a cipher.

1. Find products:  $416 \times 30$ ;  $548 \times 40$ ;  $743 \times 60$ ;  $681 \times 90$ .

2. If a bushel of wheat is worth \$1.22, how much is a load of 120 bu. of wheat worth?

3. If a dealer bought 50 bu. of wheat at \$1.15 a bushel, 30 bu. of corn at 45 cents a bushel, and 20 bu. of oats at 28 cents a bushel, how much did he pay for all?

4. Multiply 5624 by 3005.

5. Reduce  $\frac{7682}{9}$  to a mixed number.

6. How many minutes are there in the month of January?

7. If a man walked on Monday 24.30 mi., on Tuesday 18.80 mi., and on Wednesday 34.04 mi., how many miles did he walk in the three days?

8. A grocer bought molasses at the rate of  $\$ \frac{3}{8}$  a gallon and sold it at  $\$ \frac{1}{2}$  a gallon. How much did he gain on 9 bbl., each containing 32 gal.?

9. A flagstaff  $37\frac{3}{4}$  ft. high was broken off so that it measured  $29\frac{3}{4}$  ft. How long was the piece that was broken off?

10. At the rate of \$15.50 a ton, how much will  $\frac{4}{5}$  of a ton of hay cost?

## XXII

### Oral.

Rapidly answer:

$$100 \times 1 = ? \quad 100 \times 2 = ? \quad 100 \times 3 = ? \quad 100 \times 4 = ?$$

What must be annexed to 1 to make it 100? to 2 to make it 200? to 4 to make it 400?

What, then, must be annexed to any number when it is multiplied by 100?

$$312 \times 100 = ? \quad 431 \times 100 = ? \quad 729 \times 100 = ? \quad 673 \times 100 = ? \\ 485 \times 100 = ?$$

1. At 5 cents apiece, how much will 100 oranges cost?

2. I bought a table for \$7 and a chair for \$13. How much change should I receive from \$50?

3. How is .04 written as a common fraction? Reduce it to its lowest terms.

4. Read .75. What is the numerator? What is the denominator? How is it written as a common fraction? Reduce it to its lowest terms.

5. How many fourths are there in  $24\frac{3}{4}$ ?

Rapidly answer: \_\_\_\_\_

$$726 \times 100 = ? \quad 801 \times 100 = ? \quad 565 \times 100 = ? \quad 237 \times 100 = ? \\ 972 \times 100 = ?$$

Rapidly add :

4	6	8	1	3	5	8	8	2	4	6	6	7	5	7	4	9	3	2	7
6	6	6	8	8	8	8	9	8	8	8	5	6	4	7	3	8	2	1	4
3	5	7	1	2	4	6	8	1	3	5	4	5	3	6	2	7	1	1	3
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

6. At 3 cents each, how much will 100 pencils cost?
7. How many units are there in  $\frac{27}{8}$ ?
8. Reduce .25 to a common fraction in its lowest terms.
9. How many inches are there in  $1\frac{1}{2}$  yd.?
10. How many years and months are there in 52 mo.?

Written.

1. Find the products:  $517 \times 200$ ;  $428 \times 500$ ;  $635 \times 300$ ;  $582 \times 500$ ;  $746 \times 400$ .\*

2. A speculator bought 140 A. of land for \$7560 and sold 86 A. of it at \$75 an acre and the remainder at \$54 an acre. How much profit did he make?

3. Twelve men made a purchase together, each paying \$617 $\frac{3}{4}$ . What was the cost of the purchase?

4. Reduce  $\frac{4032}{6}$  to a whole or a mixed number.

5. A farmer received \$750 for his wheat, \$145.85 for his oats, \$190 for his rye, and \$213.75 for his corn. He paid \$115 for taxes, \$80 for labor, and \$865 for other expenses. How much did he save?

---

\*First multiply by the significant figure, and then annex the proper number of ciphers to the product.



6. Find the amount of the following bill :

$2\frac{3}{4}$  lb. steak at 24 cents a pound ;  $3\frac{1}{2}$  lb. lamb chops at 20 cents a pound ;  $1\frac{3}{4}$  lb. sausage at 18 cents a pound ;  $3\frac{1}{2}$  lb. mutton at 16 cents a pound ;  $10\frac{3}{4}$  lb. turkey at 28 cents a pound.

7. Mr. Smith paid \$ $6\frac{1}{2}$  for a ton of coal ; \$ $3\frac{3}{4}$  for a load of wood ; \$ $17\frac{1}{2}$  for a ton of hay. He gave in payment a fifty-dollar bill. How much change should he receive?

8. I have a garden, rectangular in shape, 360 ft. by 75 ft. Make a drawing representing it, and tell how many square yards the garden contains.

9. Reduce  $456\frac{7}{11}$  to an improper fraction.

10. Reduce  $\frac{72}{108}$  to lowest terms.

### XXIII

#### Oral.

Read at sight in lowest terms :

$\frac{6}{8}$  ;  $\frac{5}{10}$  ;  $\frac{4}{12}$  ;  $\frac{4}{8}$  ;  $\frac{6}{9}$  ;  $\frac{22}{20}$  ;  $\frac{12}{18}$  ;  $\frac{8}{15}$  ;  $\frac{11}{55}$  ;  $\frac{2}{10}$  ;  $\frac{5}{25}$  ;  $\frac{4}{20}$  ;  
 $\frac{6}{18}$  ;  $\frac{3}{12}$  ;  $\frac{4}{24}$  ;  $\frac{11}{10}$  ;  $\frac{3}{18}$  ;  $\frac{4}{24}$  ;  $\frac{6}{20}$  ;  $\frac{12}{18}$  ;  $\frac{8}{72}$  ;  $\frac{9}{81}$  ;  $\frac{6}{42}$ .

Reduce to 12ths :  $\frac{1}{2}$  ;  $\frac{1}{3}$  ;  $\frac{1}{4}$  ;  $\frac{1}{6}$  ;  $\frac{2}{3}$  ;  $\frac{3}{4}$  ;  $\frac{5}{6}$ .

Reduce to 8ths :  $\frac{1}{2}$  ;  $\frac{1}{4}$  ;  $\frac{3}{4}$  ;  $\frac{4}{18}$  ;  $\frac{6}{16}$ .

1. At \$1.25 each, how much will 9 neckties cost?

2. A plot of ground is 9 ft.  $\times$  5 ft. How many yards of fence will it take to inclose it?

3. I had  $\frac{1}{4}$  of a dollar ; I received  $\frac{1}{6}$  of a dollar. What additional part of a dollar is needed to make a whole dollar?

4. If  $\frac{3}{4}$  of a yard of silk costs 72 cents, how much will  $\frac{1}{4}$  of a yard cost?

5. There were 108 oranges in a box. How many dozen were there?

---

Multiply the following numbers by 10 and then by 100:

28; 56; 170; 350; 627; 35; 48; 42; 67; 875; 625; 273.

$$12 \times 12, + 6, + 50 = ? \quad 15 \times 10, + 2, + 5, \times 3 = ?$$

6. How much will 4 yd. of silk cost at 50 cents a yard?

7. How much will it cost to fence a lot 4 by 3 yd. at \$1.50 a yard?

8. 8 is  $\frac{2}{3}$  of what number?

9. 15 oranges out of every 25 in a box were bad. What part of the whole number was bad?

10. Reduce  $5\frac{1}{3}$  to an improper fraction.

#### Written.

1. Add \$7464 $\frac{1}{2}$ , \$219.56, \$89,091 $\frac{1}{2}$ , \$7.22, \$648 $\frac{3}{4}$ , \$700.55, \$716 $\frac{1}{4}$ , and \$875.62.

2. What does 160,190 divided by 965 equal? Prove the answer.

3. 459 is  $\frac{1}{7}$  of what number?

4. A lady buys a piano for \$720. She pays \$250 down. How long will it take her to pay the rest if she pays \$5 a month?

5. In  $3\frac{1}{2}$  mi. how many feet are there?

---

6. Add: \$465.30

786.52

394.15

617.25

872.48

13.65

1132.80

614.20

872.82

7. A cotton grower raised 786.52 154,224 lb. of cotton. How many bales averaging 324 lb. each could be made from it?

8. At 10 cents a pint, how much will 8 pk. of beans cost?

9. With carpet at \$1.75 a yard, how much will it cost to carpet a room 36 ft. long and 21 ft. wide?

10. A man had \$1000. He bought 12 cows at \$46.46 each. How much had he left?

## XXIV

Oral.

Rapidly answer:

$68 + 9 = ?$     $8 - 5 = ?$     $5 \times 10 = ?$     $17 \times 200 = ?$     $80 \div 10 = ?$   
 $34 + 7 = ?$     $9 - 8 = ?$     $8 \times 5 = ?$     $15 \times 300 = ?$     $14 \div 2 = ?$   
 $46 + 17 = ?$     $10 - 4 = ?$     $9 \times 3 = ?$     $14 \times 200 = ?$     $72 \div 9 = ?$   
 $68 + 27 = ?$     $16 - 6 = ?$     $6 \times 7 = ?$     $16 \times 300 = ?$     $14 \div 7 = ?$   
 $72 + 40 = ?$     $17 - 4 = ?$     $11 \times 5 = ?$     $25 \times 400 = ?$     $30 \div 3 = ?$   
 $72 + 44 = ?$     $18 - 8 = ?$     $3 \times 6 = ?$     $15 \times 200 = ?$     $22 \div 11 = ?$   
 $74 + 36 = ?$     $16 - 7 = ?$     $10 \times 8 = ?$     $36 \times 200 = ?$     $32 \div 8 = ?$   
 $82 + 24 = ?$     $10 - 6 = ?$     $7 \times 2 = ?$     $18 \times 300 = ?$     $63 \div 7 = ?$

Rapidly find:

$\frac{1}{2}$  of 8;  $\frac{1}{3}$  of 9;  $\frac{1}{4}$  of 8;  $\frac{1}{5}$  of 15;  $\frac{1}{6}$  of 12;  $\frac{1}{7}$  of 21;  $\frac{1}{8}$  of 16;  $\frac{1}{9}$  of 27;  $\frac{1}{10}$  of 20.

1. How many inches are there in 9 ft.?

2. Which is greater,  $2\frac{1}{2}$  ft. or 31 in.? What is the difference in inches?

3. If a yard of silk costs 64 cents, how much will  $\frac{1}{2}$  of it cost?

4. At 18 cents a yard, how much will a foot of wire cost?

5. How many quarts are there in 4 pk.?

Rapidly answer :

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$35 + 42 = ?$	$19 - 7 = ?$	$9 \times 8 = ?$	$16 \times 200 = ?$	$20 + 10 = ?$
$26 + 33 = ?$	$15 - 6 = ?$	$2 \times 7 = ?$	$14 \times 300 = ?$	$33 + 3 = ?$
$54 + 29 = ?$	$10 - 7 = ?$	$3 \times 10 = ?$	$16 \times 300 = ?$	$40 + 5 = ?$
$67 + 28 = ?$	$8 - 2 = ?$	$11 \times 2 = ?$	$25 \times 200 = ?$	$110 + 11 = ?$
$45 + 72 = ?$	$11 - 3 = ?$	$8 \times 4 = ?$	$25 \times 300 = ?$	$35 + 7 = ?$
$16 + 34 = ?$	$12 - 5 = ?$	$7 \times 9 = ?$	$18 \times 200 = ?$	$81 + 9 = ?$
$28 + 45 = ?$	$18 - 6 = ?$	$10 \times 2 = ?$	$20 \times 300 = ?$	$18 + 6 = ?$
$33 + 54 = ?$	$14 - 2 = ?$	$3 \times 11 = ?$	$10 \times 200 = ?$	$16 + 2 = ?$

Rapidly find :

$\frac{1}{11}$  of 33;  $\frac{1}{2}$  of 10;  $\frac{1}{3}$  of 15;  $\frac{1}{4}$  of 16;  $\frac{1}{5}$  of 25;  $\frac{1}{6}$  of 24;  
 $\frac{1}{7}$  of 35;  $\frac{1}{8}$  of 32;  $\frac{1}{9}$  of 36.

6. How much will 9 books cost at \$1.50 each?

7. At 5 cents a pint, find the cost of 4 qt.

8. What part of a yard is 18 in.?

9. If I give the club \$ $\frac{3}{4}$  to pay for a 40-cent book, how much change should I get?

10. A man had 3 doz. eggs. How many dozen will he have after selling 18 eggs?

Written.

1.  $856 \times 87 = ?$  Prove the answer.

2. Divide 705,083 by 547. Prove the answer.

3. Reduce  $\frac{648}{2376}$  to lowest terms.

4. There are 416 pupils in a private school. It costs \$6240 to run the school. What is the average cost for each pupil?

5. How many inches long is a piece of wire 72 yd. 5 in. long?

6. A man bought a carriage for \$250.50 and spent  $\frac{2}{3}$  as much for a horse. What was the cost of both?

7. If  $\frac{3}{4}$  of a farm is worth \$3804.75, how much is the whole farm worth?

8. Multiply 9808 by 6307.

9. Divide 40,760 by 482. Prove the answer.

10. Mr. Brown bought 360 sheep. He sold  $\frac{2}{3}$  of them at \$6 each and the remainder at \$8 each. How much did he receive for his sheep?

## XXV

### Oral.

Rapidly add; then subtract:

25	35	45	55	65	75	85	95	26	36	46	56	66	78	86
<u>13</u>	<u>17</u>	<u>18</u>	<u>18</u>	<u>30</u>	<u>21</u>	<u>19</u>	<u>18</u>	<u>13</u>	<u>15</u>	<u>22</u>	<u>22</u>	<u>18</u>	<u>26</u>	<u>44</u>

Count by 2's from 15 to 103. Count by 3's from 11 to 101.

1. How many square feet are there in an 8-foot square? How many feet are there in the perimeter of such a square?

2. How much oilcloth  $\frac{1}{2}$  of a yard wide will it take to cover a square table one side of which measures 36 in.?

3. If a glass holds 2 gi., how many glasses will it take to fill a 2-quart pitcher?

4. At  $12\frac{1}{2}$  cents each, what is the cost of 2 doz. books?
5. Change  $\frac{9}{12}$  to its lowest terms.

Rapidly add; then subtract:

67	27	87	97	28	38	48	58	68	78	88	67	96	26	43
33	18	19	24	9	19	19	12	14	15	13	26	33	14	21

6. Reduce  $\frac{40}{80}$  to its lowest terms.
7. Write .4 as a common fraction.
8. Write  $\frac{7}{100}$  as a decimal.
9. If I buy oranges for 3 cents apiece and sell them for 5 cents apiece, how much shall I gain on 2 doz.?
10. How many eighths are there in  $12\frac{1}{4}$ ?

Written.

1. Add: \$74.64
2. A man sold a horse for 219.56 \$275.40, by which he gained 800.91 \$30.80. How much would he 7.22 have lost had he sold it for \$240 $\frac{1}{2}$ ? 6.48
3. A man bought books for \$ $\frac{3}{4}$  700.09 each and sold them for \$ $\frac{3}{4}$  each. 71.62 Find the gain on 24 books.

4. A man bought 360 A. of land and sold 42 $\frac{3}{4}$  A. at one time and 120 $\frac{7}{10}$  A. at another. How many acres had he left?

5. A man bought 80 bu. of potatoes at 90 cents a bushel. He sold  $\frac{1}{2}$  of them for 30 cents a peck,  $\frac{1}{4}$  of the remainder at 35 cents a peck, and what still remained at 40 cents a peck. How much did he gain?

6. A man having \$15,000 in bank deposited \$3875, drew out \$8725, and then put in enough to make his deposit \$20,000. How much did he put in last?

7. How many feet are there in 17 mi.?

8. Two men who are 950 mi. apart travel toward each other, one at the rate of 30 mi. a day and the other at the rate of 42 mi. At the end of 8 da. how far apart will they be?

9. Find the value of  $9 \times 8, + 51, \times 10, - 7, \times 104, + 26$ .

10. Find the value of a field 180 rd. long and 90 rd. wide at \$20 an acre.

## XXVI

### Oral.

Rapidly tell how many 10's there are in 40; in 50; in 60; in 70; in 100; in 150; in 200; in 300.

What must be struck from the number 40 to make it 4? from 50 to make it 5? from 100 to make it 10? from 300 to make it 30?

Rapidly divide by 10: 200; 40; 500; 50; 650; 870; 460; 700; 800; 850; 970; 320; 35; 355; 275; 326; 46; 72; 427; 3678; 479; 875.

Place a decimal point between tens' place and units' place, and then read the number: 100; 150; 165; 40; 60; 75; 750; 70; 700; 85; 850; 225; 36; 74; 740; 35; 355.

1. If 14 pencils cost 24 cents, find the cost of 7 pencils.

2. How many ounces are there in  $\frac{7}{8}$  of a pound of sugar?

3. A bookseller bought 15 books for \$30 and sold them at a gain of \$15. How much apiece did he get for them?

4. Nellie's slate cost 15 cents, which was  $\frac{3}{5}$  as much as her arithmetic cost. Find the cost of the arithmetic.

5. Three pecks equal what part of a bushel?

Rapidly answer:

$20 \div 10 = ?$     $60 \div 10 = ?$     $5000 \div 10 = ?$     $70 \div 10 = ?$   
 $350 \div 10 = ?$     $50 \div 10 = ?$     $800 \div 10 = ?$     $850 \div 10 = ?$     $65 \div 10 = ?$  \*  
 $25 \div 10 = ?$     $87 \div 10 = ?$     $897 \div 10 = ?$     $456 \div 10 = ?$     $320 \div 10 = ?$   
 $424 \div 10 = ?$     $325 \div 10 = ?$     $478 \div 10 = ?$     $942 \div 10 = ?$

Express each of the above divisions as fractions.

6. If 4 lemons cost 12 cents, how much will 16 lemons cost?

7. If calico is worth 20 cents a yard, what part of a yard can I buy for 15 cents?

8. If I pay 9 cents for  $1\frac{1}{2}$  lb. of sugar, how much will 1 lb. cost?

9. At 2 cents each, how many lemons can I buy for \$3?

10. If 2 boys can make a box in 5 min., how long, at the same rate, will it take 1 boy to make it?

**Written.**

Multiply 840 by 300.

$\begin{array}{r} 840 \\ 300 \\ \hline 252,000 \end{array}$ 
 Multiply together the significant figures 84 and 3, then annex to the product as many ciphers as there are to the right of both factors.

1. Multiply 4030 by 5700; 43,712 by 3200; 70,140 by 5400.

2. A man bought 260 A. of cleared land at \$65 an acre and 40 A. of wood land at \$74.75 an acre. How much did he pay for all the land?

\* Read  $65 \div 10$  as  $6\frac{5}{10}$ .



3. If 6 lb. of coffee cost \$1.80, how much could you buy for \$3.60?

4. A man having \$406 paid \$30 for clothing, \$75 for board, \$19.75 for books, and a debt of \$203. How much had he left?

5. A merchant tailor pays \$250 for 11 coats. For how much apiece must he sell them to gain \$25?

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6. Multiply 7060 by 5600; 68,200 by 300; 5614 by 780.

7. Last season a cheese factory used the milk of 470 cows and made 320 lb. of cheese per cow. What was the value of the product at  $9\frac{1}{2}$  cents a pound?

8. A man bought  $20\frac{1}{2}$  lb. of sugar; he sold  $10\frac{3}{4}$  lb. at one time and  $6\frac{1}{2}$  lb. at another. How much had he left?

9. A merchant sold 4 pieces of cloth containing  $27\frac{1}{2}$  yd.,  $26\frac{3}{8}$  yd.,  $29\frac{5}{8}$  yd., and  $28\frac{3}{4}$  yd., respectively. How much did he receive for the cloth at 96 cents per yard?

10. Reduce  $\frac{1\frac{3}{4}}{\frac{2}{5}}$  to lowest terms.

## XXVII

### Oral.

How many 100's are there in 400? in 500? in 1500? in 2500?

What must be struck from 400 to make the number 4? from 500 to make it 5? from 1500 to make it 15? from 2500 to make it 25?

Divide 800 by 100; 600 by 100; 1800 by 100; 2000 by 100; 600 by 10; 700 by 100; 75 by 10; 50 by 10; 55 by 10; 5 by 10.

Rapidly answer:

$36,700 + 100$ ;  $41,500 + 100$ ;  $45,600 + 100$ ;  $3600 + 100$ ;  
 $5600 + 100$ .

Add by 8's from 0 to 88. Add by 7's from 4 to 95.

Subtract by 4's from 48 to 8. Subtract by 8's from 96 to 8.

1. How many pounds are there in  $\frac{1}{4}$  of a barrel of flour?
2. A man paid \$1 for a bag of peanuts containing 3 pk. He sold them at \$.10 a quart. How much did he gain?
3. One can has in it 4 gal. of milk and another has in it 6 qt. How many pints are there in both?
4. At 5 cents a pint, how much would be paid for a bushel of chestnuts?
5. How many square feet are there in a rectangle 9 ft. long and 7 ft. wide? What is the perimeter of this rectangle in feet?

---

Tell how many figures you strike from the following numbers in dividing by 10; by 100; and by 1000:

3000; 11,000; 15,000; 88,000; 12,000; 39,000. (Read the quotients after each division.)

Rapidly give the answers:

$47,600 + 100$ ;  $4800 + 100$ ;  $4800 + 10$ ;  $267,000 + 1000$ .  
 $53 + 9$ ;  $63 + 9$ ;  $85 + 9$ ;  $72 + 9$ ;  $85 + 24$ ;  $24 + 85$ ;  
 $24 + 58$ ;  $42 + 58$ ;  $42 + 85$ ;  $46 + 23$ ;  $56 + 24$ ;  $27 + 52$ .  
 $9 + 8$ ,  $- 5$ ,  $+ 3$ ,  $+ 7$ ,  $- 2$ ,  $+ 6$ ,  $- 8$ ,  $+ 4$ ,  $+ 5$ ,  $- 9 = ?$

6.  $\frac{3}{10} - \frac{1}{10} =$  how many tenths?

7. Peter had  $\frac{1}{2}$  a dollar; he spent  $\frac{1}{10}$  of a dollar. How many cents had he left?

8. I bought 9 yd. of muslin and used 4 yd. What part of 9 yd. had I left?

9. How many yards are there in 100 ft.?

10. If I bought a wagon for \$75 and sold it for \$69, how much did I lose?

**Written.**

Suggestion showing rapid division (by multiples of 10).

$$\begin{array}{r} 327 \\ 1|00 \overline{)327|00} \end{array}$$

$$\begin{array}{r} 456 \overline{)23} \\ 1|00 \overline{)456|23} \end{array}$$

$$\begin{array}{r} 38 \overline{)769} \\ 1|000 \overline{)38|769} \end{array}$$

$$\begin{array}{r} 179 \overline{)67} \\ 2|00 \overline{)358|67} \end{array}$$

$$\begin{array}{r} 107 \overline{)43} \\ 5|00 \overline{)536|43} \end{array}$$

$$\begin{array}{r} 142 \overline{)785} \\ 3|000 \overline{)426|785} \end{array}$$

1. Divide 6174 by 80; 93,673 by 900; 437,527 by 7000.
  2. A dealer bought 17 mowers at \$25 each, and gave in exchange 12 T. of old metal at \$5.25 a ton and the balance in cash. How much cash did he pay?
  3. Reduce  $74\frac{1}{2}$  to an improper fraction.
  4. Reduce  $1\frac{2}{3}$  to a mixed number.
  5. The exact weight of 3 boxes of goods was  $78\frac{1}{2}$  lb.,  $134\frac{3}{4}$  lb., and  $206\frac{5}{8}$  lb., respectively. What was the total weight?
- 
6. Divide 5672 by 90; 87,354 by 800; 764,324 by 6000.
  7. Change  $\frac{1}{4}$  to 28ths.
  8. Reduce  $\frac{1}{9}$  to lowest terms.
  9. From a pole the length of which was  $70\frac{7}{10}$  ft.,  $13\frac{7}{8}$  ft. were broken off. How long was the pole after breaking?
  10. How much will 3 pieces of muslin cost at  $6\frac{1}{4}$  cents a yard if each piece contains 28 yd.?

## XXVIII

Oral.

Rapidly add:

7	5	6	8	9	7	8	9	6	3	5	9	6	5	4	3	7	4	8	6
9	9	9	9	9	9	4	5	7	7	8	2	1	3	7	1	5	9	2	5
7	9	9	9	9	8	9	7	7	9	4	7	9	8	4	9	7	9	8	6

Read:

.04; .058; .16; .572; .016; .5; .782; .42; .042; .007.

What is the numerator of each of these fractions? the denominator of each of these fractions? What kind of fractions are these? What is a decimal fraction?

Express as decimal fractions:  $\frac{7}{10}$ ;  $\frac{5}{10}$ ;  $\frac{45}{100}$ ;  $\frac{25}{1000}$ ;  $\frac{85}{1000}$ ;  $\frac{8}{100}$ ;  $\frac{8}{10}$ ;  $\frac{8}{1000}$ ;  $\frac{15}{10}$ ;  $\frac{25}{10}$ .

1. Express .05 as a common fraction; .85 as a common fraction in its lowest terms.

2. Three fourths of 16 is  $\frac{1}{3}$  of what number?

3. I bought a piano for \$200 and sold it at a loss of \$65. What was the selling price?

4. If 2 pencils cost 7 cents, how many pencils can I buy for 35 cents?

5. How long a piece of lace will be needed to put around a handkerchief 6 in. by 5 in.?

Rapidly add:

6	4	7	3	8	2	9	1	1	2	3	4	5	6	7	8	9	1	2	3
5	3	6	2	7	1	8	1	5	6	7	8	9	1	2	3	4	5	6	7
4	2	5	1	6	3	1	5	3	4	5	6	7	8	9	0	1	2	3	4

The denominator is 10; the numerator is 6. How is the decimal written?

The denominator is 100; the numerator is 18. How is the decimal written?

The denominator is 1000; the numerator is 7. How is the decimal written?

Name the number or decimal which is expressed as follows: decimal point, cipher, seven; decimal point, three; decimal point, cipher, three; decimal point, cipher, thirteen; decimal point, cipher, cipher, two; seven, decimal point, cipher, three.

6. Change .30 to a common fraction. Write  $\frac{3}{10}$  as a decimal fraction.

7. Reduce  $6\frac{1}{2}$  to a mixed number.

8. I had \$10 and spent \$5 $\frac{1}{2}$ . How much did I have left?

9. A boy has 32 marbles, which is  $\frac{4}{5}$  as many as his brother has. How many has his brother? How many have both?

10. How many 6ths are there in  $8\frac{5}{6}$ ?

### Written.

1. Add: 274,125

753,671

246,137

953,646

271,482

496,317

720,463

876,517

914,358

2. From \$7080.48 take \$4236.95.

3. I had in bank on Monday morning \$750. On Tuesday I deposited \$230. On Wednesday I deposited \$475. Thursday I drew a check for \$322.60. Friday I drew a check for \$172.25. How much remained in bank?

4. Reduce .125 to a common fraction in its lowest terms. Multiply 572 by 900. Divide 728,379 by 8000.

5. The stock of a railroad company is \$3,750,000. If it is divided into shares of \$500 each, how many shares are there?

6. Find the product of 68,007 multiplied by 3012.

7. Find the quotient of 5,678,203 divided by 798.

8. Mr. Reeves's barn cost \$2350; his house cost 3 times as much as his barn; and his farm cost as much as both. What was the cost of the farm?

9. A schoolroom is  $40\frac{1}{2}$  ft. long and  $32\frac{3}{4}$  ft. wide. What is the distance around the room in feet?

10. A dry goods clerk sold  $17\frac{3}{4}$  yd. of muslin from a piece containing  $32\frac{1}{2}$  yd. How many yards were left?

## XXIX

### Oral.

Rapidly answer :

$23 + 24 = ?$	$58 - 22 = ?$	$24 \times 4 = ?$	$40 \div 4 = ?$
$25 + 26 = ?$	$65 - 13 = ?$	$25 \times 3 = ?$	$10 \div 5 = ?$
$18 + 19 = ?$	$37 - 12 = ?$	$26 \times 4 = ?$	$70 \div 7 = ?$
$29 + 13 = ?$	$59 - 25 = ?$	$27 \times 4 = ?$	$12 \div 2 = ?$
$17 + 19 = ?$	$75 - 38 = ?$	$28 \times 3 = ?$	$64 \div 8 = ?$
$16 + 17 = ?$	$27 - 19 = ?$	$29 \times 4 = ?$	$27 \div 3 = ?$
$15 + 13 = ?$	$56 - 48 = ?$	$30 \times 5 = ?$	$33 \div 11 = ?$
$14 + 19 = ?$	$48 - 25 = ?$	$13 \times 6 = ?$	$42 \div 7 = ?$

1. 1200 cabbage plants are to be placed in 30 rows. How many plants will there be in each row?

2. A farmer had 19 cows, and they averaged 6 lb. of butter per week. How many pounds of butter did he make in one week?

3. A clothesline measures 17 yd. How many feet long is it?

4. If oranges cost 6 for a quarter, what will be the cost of 3 doz.?

5. How many 3-cent fares can a boy pay out of \$.88?

Rapidly answer:

---

$29 + 14 = ?$	$32 - 16 = ?$	$16 \times 7 = ?$	$40 + 5 = ?$
$75 + 23 = ?$	$48 - 32 = ?$	$15 \times 7 = ?$	$72 + 9 = ?$
$67 + 26 = ?$	$45 - 15 = ?$	$18 \times 3 = ?$	$24 + 8 = ?$
$23 + 14 = ?$	$28 - 14 = ?$	$17 \times 4 = ?$	$12 + 6 = ?$
$43 + 21 = ?$	$45 - 16 = ?$	$13 \times 7 = ?$	$18 + 2 = ?$
$26 + 12 = ?$	$25 - 12 = ?$	$14 \times 6 = ?$	$77 + 7 = ?$
$67 + 16 = ?$	$64 - 32 = ?$	$24 \times 5 = ?$	$66 + 6 = ?$
$21 + 14 = ?$	$36 - 18 = ?$	$30 \times 5 = ?$	$54 + 6 = ?$

6. At 30 cents an hour, what will be the cost of hiring a boat from 9.30 A.M. to 12 M.?

7. At \$1.75 each, find the cost of 10 books.

8. How many square feet are there in a room 9 x 5 ft.?

9. The sum of two numbers is  $16\frac{1}{2}$ ; one of them is  $9\frac{1}{4}$ . What is the other number?

10. If it takes 3 men 9 da. to build a fence, how long will it take 1 man?

Written.

1. Find the total cost of:

7 lb. of sugar at \$.05 $\frac{1}{4}$  a pound.

1 gal. of sirup at \$.12 a pint.

4 lb. of nuts at \$.20 a pound.

3 lb. of coffee at \$.28 a pound.

2. How many years are equal to 1728 months?
3. Mr. Newman sold his horse for \$360 and thereby gained  $\frac{1}{5}$  of that amount. How much did the horse cost him?
4. A square field is 20 rd. on a side. How much will it cost to build a fence around it at \$1.50 a rod?
5. Find the cost of  $6\frac{3}{4}$  lb. of coffee at \$.32 a pound.
6. Mrs. Smith had a strip of cloth  $75\frac{3}{4}$  in. long; she used all but  $9\frac{1}{8}$  in. How many inches did she use?
7. A farmer bought 40 sheep at \$7 each, 40 cows at \$30 per head, and 4 horses at \$200 each; he sold them all for \$3000. How much did he gain?
8. A certain number is contained 41 times in 1048, with a remainder of 18. What is the number?
9. Find the value of  $(152 + 119 - 118) \div 9$ .
10. A man bought 96 apples at the rate of 4 for 6 cents and exchanged them for pears at 8 cents apiece. How many pears did he receive?

**XXX****Oral.**

Rapidly answer:

$$36 + 16, - 20, + 24, - 6 = ? \quad 57 + 24, - 40, + 19, - 20 = ?$$

How many hundredths are there in .5? in .7? in .8?

How many thousandths are there in .9? in .09? in .7?

Reduce .5, .04, .4, .6, .08 to thousandths.

1. Add .5, .03, .2 as hundredths.
2. One half of 14 is  $\frac{1}{8}$  of what number?
3. If Maria spends \$.75 a day, in how many days will she spend \$9?



4. At  $16\frac{3}{4}$  cents a yard, how much will 12 yd. of ribbon cost?

5. A boy lives  $10\frac{1}{2}$  rd. from his school. How far does he walk in a day to attend two sessions of school?

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Multiply 15 by 5; take 18 from the product. What is the answer?

How many 9's are there in 3 times 21?

To 9 times 7 add 10; take 15 from the sum. What is the answer?

6. Reduce .8, .05, .6, .07, .005, .08 to the same denominator.

7. I have a quarter, two dimes, and three cents. At 3 cents apiece, how many oranges can I buy with my money?

8. One boy lives  $\frac{1}{10}$  of a mile north of the school, and another  $\frac{1}{5}$  of a mile south of it. How far apart do they live?

9. If 30 cents is  $\frac{1}{4}$  of the money I paid for a book, how much did the book cost?

10. Reduce  $\frac{1}{2}\frac{3}{4}$  to its lowest terms.

### Written.

1. From the sum of  $813\frac{3}{4}$  and  $720\frac{3}{4}$  subtract  $86\frac{1}{2}$ .

2. If  $\frac{5}{8}$  of a man's money is in the bank and he has \$2560 there, how much is he worth?

3. My library is 25 ft. long and 18 ft. wide. How much will it cost to carpet it at \$1.50 a yard?

4. What will be the cost to put molding around the room described in example 3 at 12 cents a foot?

5. How much will it cost to paint the ceiling of the room described in example 3 at 25 cents a square yard?

6. How many cubic feet of air are in the room described in example 3, if the ceiling is  $14\frac{1}{2}$  ft. from the floor?

7. Multiply  $628\frac{4}{5}$  by 124.

8. John can run a hundred yards in 14.2 sec. and George in 13.8 sec. What is the difference in time between their records?

9. Syracuse is situated on a railroad 439.44 mi. long between New York and Buffalo, and is 148.72 mi. from Buffalo. How far *via* the railroad is Syracuse from New York?

10. Find the total cost of: 60 plates at \$.10; 36 collars at \$.12 $\frac{1}{2}$ ; 66 thimbles at \$.33 $\frac{1}{3}$ ; 18 handkerchiefs at \$.25; 22 hairbrushes at \$.37 $\frac{1}{2}$ .

### XXXI

#### Oral.

Rapidly answer:

$$27 + 15, + 18, + 25, + 9 = ?$$

$$8 \times 0, + 6, \times 4, + 8 = ?$$

$$10 \times 12, - 5, \times 6, + 6 = ?$$

$$9 \times 11, - 54, + 5, + 20 = ?$$

How many seconds are there in 1 min.? How many times 1 sec. is 1 min.? 1 sec. is what part of 1 min.? How many minutes are there in 1 hr.? 1 min. is what part of 1 hr.? How many times 1 min. is 1 hr.? How many times 1 sec. is 1 hr.? How many seconds are there in 1 hr.? How many hours are there in 1 da.? 1 hr. is what part of a day?

1. Read .24; .16; .2; 428.24; 28.92; 7.6; 845.62.

2. I bought a tie for  $\$ \frac{1}{4}$  and sold it for  $\$ \frac{3}{10}$ . How much did I gain?

3. A boy sleeps 8 hr. every day. What part of the day is he awake?

4. How much is a bushel of potatoes worth at 5 cents a quart?

5. How many half-pint tumblerfuls of milk are there in a gallon?

$$6 + 7 + 8 + 5 + 4 + 9 + 8 + 5 + 3 + 4 + 2 + 5 + 9 = ?$$

$$7 + 11 + 8 + 6 + 4 + 7 + 2 + 3 + 4 + 2 + 7 + 8 + 15 + 20 = ?$$

How many days are there in one week? Compare a day and a week as to length of time. Three days is what part of a week? How many weeks are there in a month? Three weeks is what part of a month? Three days is how many hundredths of a month? How many months are there in a year? How many weeks are there in a year? How many days are there in a year?

6. How many hours are there from 6 A.M. to 5 P.M.?

7. How many minutes are there from 10 min. past 9 o'clock to 25 min. past 10 o'clock A.M.?

8. How much will 3 bu. of sand cost at 4 cents a peck?

9. If a quart of milk is worth 7 cents, what is the value of 2 gal.?

10. James had  $\$ \frac{1}{2}$  to spend. He bought 14 cents' worth of candy and spent the rest of his money for oranges at 4 cents each. How many oranges did he buy?

### Written.

1. Reduce  $224\frac{5}{8}$  to an improper fraction.

2. Reduce  $44\frac{3}{5}$  to a mixed number.

3. Change  $\frac{1}{2}$ ,  $\frac{2}{3}$ , and  $\frac{3}{4}$  to twelfths.

4. A father gave his 3 sons \$5, \$7 $\frac{1}{2}$ , and \$8 $\frac{1}{4}$ , respectively, and had \$10 $\frac{3}{4}$  left. How much money had he at first?

5. How much added to \$10 $\frac{3}{4}$  will make \$15 $\frac{1}{3}$ ?

6. Reduce  $\frac{224}{138}$  to lowest terms.

7. Change  $26\frac{1}{7}$  to an improper fraction.

8. I gave 132 doz. eggs worth 26 cents a dozen in part payment for 54 cd. of wood at \$4.60 a cord. How much remains to be paid?

9. From a barrel of oil containing 35 gal., 15 gal. were used. How much is the remainder worth at 4 $\frac{1}{2}$  cents a quart?

10. A man deposited in the bank \$1840, and drew out by check the following amounts: \$26.48, \$134.18, \$1227.09, \$6.04, \$34.96, \$87.45, and \$50. How much had he left in the bank?

### XXXII

#### Oral.

At sight give the missing number :

77	67	78	89	13	17	56	19	17	12	54
?	?	?	?	?	?	?	?	?	?	?
<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>84</u>	<u>69</u>	<u>78</u>	<u>88</u>	<u>100</u>

1. A newsboy on Broadway had \$ $\frac{3}{4}$  in his pocket. He sold 20 papers at 3 cents each. How much money had he then?

2. John priced apples at the grocer's and found them 2 for 5 cents. He bought  $\frac{1}{2}$  of a dozen. How much change did he get from a dollar bill?

3. What part of a yard is 27 in.?
4. At 18 cents a yard, how much will a foot of wire cost?
5. I had 9 lb. of butter and in a week used 6 lb. 5 oz. How much had I left?

At sight give the missing number:

47	23	76	87	47	52	33	39	48	73	26	14	12
?	?	?	?	?	?	?	?	?	?	?	?	?
<u>54</u>	<u>45</u>	<u>100</u>	<u>99</u>	<u>65</u>	<u>102</u>	<u>99</u>	<u>62</u>	<u>72</u>	<u>95</u>	<u>74</u>	<u>98</u>	<u>72</u>

6. James had \$1. He spent  $\frac{3}{4}$  of it. How much had he left?
7. At 5 cents a pint, how much will 4 qt. cost?
8. How many inches are there in 9 ft.?
9. Mr. Reed had 36 sheep. Wolves killed  $\frac{5}{6}$  of them. How many were killed?
10.  $\frac{1}{2}$  is how many times  $\frac{1}{4}$ ?  $\frac{1}{4}$  is what part of  $\frac{1}{2}$ ?

### Written.

1. Find the sum of the following decimals as thousandths: .125; .07; 8; .314; .165; .034; .008; .95; .184; .009.
2. Find the sum of .45, 8.75, .016, 3.25, 45.2, .008.
3. Find the difference between 18.5 and 2.347, after reducing both decimals to the same denominator.
4. Add, after reducing to dollars, cents, and mills in each case, \$25 $\frac{3}{4}$ , \$81.09, \$16 $\frac{1}{8}$ , \$.87 $\frac{1}{2}$ , \$150 $\frac{7}{8}$ , \$327 $\frac{3}{4}$ .
5. Change the following numbers to common fractions in their lowest terms: .16; .625; .75; .375; .875.

6. Reduce to equivalent decimals having a common denominator: .5; .08; .023; .14; .009; .6; .007; .09.

7. How many hundredths are there in  $\frac{3}{5}$ ;  $\frac{4}{25}$ ;  $\frac{2}{50}$ ?  
Add the fractions as hundredths.

8. What is the difference in the cost of 87 head of cattle at \$37.50 a head and 6308 sheep at \$5 $\frac{1}{2}$  a head?

9. A grocer paid \$31.50 for 21 baskets of peaches, and sold each basket for 25 cents more than it cost. How much did he charge for a basket?

10. If it costs \$840,000 to build 1680 mi. of telegraph line, what is the cost of a mile of the line?

### XXXIII

#### Oral.

Rapidly reduce to lowest terms:

$\frac{3}{8}$ ;  $\frac{4}{8}$ ;  $\frac{5}{10}$ ;  $\frac{15}{20}$ ;  $\frac{12}{18}$ ;  $\frac{4}{8}$ ;  $\frac{6}{12}$ ;  $\frac{6}{18}$ ;  $\frac{24}{24}$ ;  $\frac{15}{25}$ ;  $\frac{4}{20}$ ;  $\frac{5}{25}$ ;  $\frac{6}{8}$ ;  
 $\frac{8}{8}$ ;  $\frac{12}{24}$ ;  $\frac{15}{30}$ ;  $\frac{20}{20}$ ;  $\frac{27}{27}$ ;  $\frac{8}{24}$ ;  $\frac{12}{24}$ .

1. I had \$10 and spent \$6 $\frac{3}{4}$ . How much money had I left? How many dollars and cents?

2. I bought a knife for 89 cents and sold it and gained 15 cents. For how much did I sell it?

3. How much money have I, if  $\frac{7}{8}$  of my money is 14 cents?

4. Change 8 $\frac{7}{8}$  to an improper fraction.

5. Tell how to write as a decimal  $\frac{2}{10}$ ;  $\frac{7}{100}$ ;  $\frac{8}{10}$ ;  $\frac{2}{1000}$ .

Reduce to whole or mixed numbers:

$\frac{12}{8}$ ;  $\frac{25}{5}$ ;  $\frac{12}{2}$ ;  $\frac{14}{4}$ ;  $\frac{17}{8}$ ;  $\frac{48}{6}$ ;  $\frac{56}{7}$ ;  $\frac{16}{2}$ ;  $\frac{24}{4}$ ;  $\frac{26}{2}$ ;  $\frac{22}{7}$ ;  $\frac{45}{5}$ ;  
 $\frac{45}{8}$ ;  $\frac{12}{4}$ ;  $\frac{24}{8}$ ;  $\frac{15}{7}$ ;  $\frac{62}{8}$ ;  $\frac{12}{7}$ ;  $\frac{26}{8}$ ;  $\frac{45}{2}$ .

6. A boy earns \$15 a month and spends \$10. How much does he save in 1 yr. ?

7. If  $\frac{3}{4}$  of a yard costs \$12, how much will 1 yd. cost ?

8.  $\frac{1}{8}$  of 96 is how many times 8 ?

9. If \$15 is  $\frac{1}{4}$  of James's money, how much money has he ?

10. Mary had 15 examples out of 20 right. What part had she right ? What part had she wrong, and what per cent of examples did she work correctly ?

### Written.

1. Add: 7,146,712

3,427,164

6,435,271

8,176,325

4,264,537

3,547,362

6,128,413

7,341,876

2,368,154

2. A man bought a horse for \$250, a buggy for \$174, and 8 cows for as much as he paid for the horse and buggy. What was the value of each cow ?

3. I went to a store and bought a hat for \$1.75, a tie for 45 cents, 6 collars for \$1.25, 6 linen handkerchiefs for \$1.87, and a cane for \$2.25. I handed the clerk a

twenty-dollar bill. How much change did I receive ?

4. Multiply 57,241 by 6354 ; 70,140 by 5400.

5. How many feet are there in 315 mi. ?

6. Divide 234,605,372 by 876 ; 546,735 by 4000.

7. The product of two numbers is 515,522 and the smaller is 322. What is the larger number ?

8. A clerk receives a salary of \$60 a month, and his expenses are \$45 a month. In how many years at this rate can he pay for a house which cost him \$1800 ?

9. The day rate on a telegram from New York to Chicago is 50 cents for the first 10 words. The night rate for telegraphing "night letters" of 50 words or less is the same as the day rate on 10 words; and  $\frac{1}{5}$  of the day rate for every 10 words (or less) over 50 words. Find the cost of sending a "night letter" of 65 words from New York to Chicago.\*

10. Find the cost of telegraphing "night letters" of 75 words to places where the day rate on telegrams is as follows: 60 cents for first 10 words; 75 cents; \$1.00.

## XXXIV

## Oral.

Rapidly multiply, giving only results:

30	20	60	40	50	10	80	70	12	14	10	20
$1\frac{1}{2}$	$2\frac{1}{2}$	$3\frac{1}{2}$	$4\frac{1}{2}$	$5\frac{1}{2}$	$6\frac{1}{2}$	$7\frac{1}{2}$	$8\frac{1}{2}$	$9\frac{1}{2}$	$10\frac{1}{2}$	$11\frac{1}{2}$	$12\frac{1}{2}$

1. If beans are sold at 12 cents a quart or 80 cents a peck, how much is saved by buying a peck, rather than 8 separate quarts?

2. A farmer has 16 cows in 1 stable, and 3 times as many in another stable. How many cows has he?

3. Reduce  $\frac{17}{4}$  to a mixed number.

4. How many twenty-eighths are equal to  $\frac{3}{4}$ ?

5. If 1 book costs \$1.25, how much will 8 books cost at the same price?

Rapidly multiply, giving only results:

39	15	21	12	18	6	12	9	12	33	30	12
$1\frac{1}{3}$	$2\frac{1}{3}$	$3\frac{1}{3}$	$4\frac{1}{3}$	$5\frac{1}{3}$	$6\frac{1}{3}$	$7\frac{1}{3}$	$8\frac{1}{3}$	$9\frac{1}{3}$	$10\frac{1}{3}$	$11\frac{1}{3}$	$12\frac{1}{3}$

\* 50 cents for first 50 words plus  $2 \times (\frac{1}{5} \text{ of } 50 \text{ cents}) = 70 \text{ cents.}$



6. I bought a book for 29 cents and gained 9 cents when I sold it. For how much did I sell it?

7. A farmer has 23 bu. of wheat and 8 times as many bushels of oats. How many bushels of grain has he?

8. A farmer kept 45 hogs in 3 pens. In the first pen there were 20 hogs, and in the second 15. How many were there in the third?

9. Reduce  $\frac{50}{100}$  to a common fraction.

10. How many 4-ounce boxes will 2 lb. of candy fill?

### Written.

1. My farm contains 175 A. At what price per acre must I sell it to receive \$14,175?

2. How many acres of land at \$50 per acre can I get in exchange for 75 A. of land at \$90 per acre?

3. Reduce  $\frac{384}{8}$  to lowest terms.

4. Reduce  $\frac{24}{5}$  to 75ths.

5. My garden plot contains 9600 sq. ft. If one side measures 80 ft., what is the length of the other side?

6. Reduce  $\frac{5345}{80}$  to a mixed number.

7. Reduce  $214\frac{7}{11}$  to an improper fraction.

8. Write the fractions as decimals and add:  $325\frac{1}{4}$ ,  $586\frac{3}{8}$ ,  $75\frac{1}{2}$ ,  $872\frac{4}{5}$ ,  $562\frac{3}{5}$ ,  $4876\frac{7}{8}$ ,  $78\frac{3}{4}$ ,  $2465\frac{5}{8}$ .

9. A real estate agent bought 140 A. of land for \$7560, and sold 95 A. of it at \$87 an acre and the remainder at \$54 an acre. How much did he gain?

10. Write in the form of a decimal and read:  $\frac{7}{10}$ ;  $\frac{13}{100}$ ;  $\frac{9}{10}$ ;  $\frac{4}{100}$ ;  $\frac{125}{1000}$ ;  $\frac{22}{1000}$ ;  $\frac{20}{100}$ ;  $\frac{8}{1000}$ ;  $\frac{206}{1000}$ ;  $\frac{206}{100}$ ;  $\frac{206}{10}$ .

## XXXV

## Oral.

Rapidly add; then subtract; then multiply; then divide:

31	42	53	64	73	86	97	30	41	52	54	81	49	64	66
5	6	7	8	7	5	6	7	8	9	6	9	7	8	6
<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>

Eighteen is how many times 3? Sixteen is how many times 8?

1. If a boy can make 2 boxes in 5 min., how many can he make in 1 hr.?

2. John lives  $\frac{3}{4}$  of a mile east of the schoolhouse, and James  $\frac{3}{4}$  of a mile west. How far apart do they live?

3. How many miles will James walk if he attends two sessions of the school and visits John before coming home at the end of the afternoon session? (Make a drawing showing the distances.)

4. What part of a ton is 4 cwt.?

5. How many square yards of oilcloth will be required to cover a floor 8 ft. long by 9 ft. wide?

Rapidly add; then subtract; then multiply; then divide:

98	20	31	42	53	64	86	97	22	33	49	68	77	56	47
6	7	8	9	4	5	4	5	6	7	6	8	7	9	7
<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>

Fifty-four is how many times 9? What part of 54 is 9?

6. Two thirds of the pupils in a class number 28. Find the number on register.

7. A farmer bought 4 ducks at \$2 each, and sold them all for \$12. What was his gain on each duck?

8. If  $2\frac{1}{2}$  lb. of candy were equally divided among 5 boys, how many ounces did each receive?
9. How much will 3 qt. of milk cost at 2 cents a pint?
10. One half of 12 is  $\frac{2}{3}$  of what number?

**Written.**

1. Write and read in the form of a common fraction :  
.6; .02; .28; .040; .024; .10; .005; .06; .012; .400.
  2. Change .230 to hundredths; .5 to thousandths.
  3. Reduce to decimals having a common denominator :  
4.5; 2.17; .136; 4.29; .03; 6.07; 45.025; .008.
  4. I deposited in the bank \$2000, and drew out at one time \$250 $\frac{1}{4}$ , at another time \$322.62. How much of my money remained in the bank?
  5. A speculator having 7346 A. of land sold at different times 364 $\frac{1}{2}$  A., 1235.125 A., 2700 $\frac{7}{8}$  A., and 850.65 A. How many acres had he left?
- 
6. Write seven hundred five thousandths; fifteen hundredths; seven thousandths; fifty-three thousandths; six and three hundred six thousandths.
  7. A keeper of a toll bridge received \$104 on Monday, \$97 on Tuesday, \$128 on Wednesday, and \$99 on Thursday. What were the average daily receipts?
  8. At \$75,000 a year, what is the salary of the President of the United States for a month? What is it for a week?
  9. If my income is \$3000 a year and my expenses are \$40 a week, how much do I save in a year?
  10. How much will 170 bbl. of apples cost at \$2 $\frac{3}{4}$  a barrel?

## XXXVI

## Oral.

Rapidly subtract, naming only the answers:

$$\begin{array}{cccccccccccc} 7 & 9 & 8 & 9 & 4 & 7 & 8 & 4 & 12 & 15 & 17 & 23 \\ \hline 1\frac{1}{2} & 2\frac{1}{4} & 2\frac{1}{2} & 3\frac{1}{2} & 1\frac{1}{2} & 1\frac{1}{4} & 3\frac{1}{4} & 1\frac{1}{4} & 2\frac{1}{2} & 2\frac{1}{2} & 3\frac{1}{4} & 5\frac{1}{6} \end{array}$$

1. How many square yards are there in a floor 8 ft. long and 9 ft. wide?
2. The day rate on a telegram from New York to Hartford being 25 cents for the first 10 words, find the cost of telegraphing a "night letter" of 60 words.\*
3. A grocer wrapped up  $1\frac{1}{2}$  lb. of tea in  $\frac{1}{4}$ -pound packages. How many packages were there?
4. If there are 100 pages in  $\frac{4}{5}$  of a book, how many pages are there in the whole book?
5. Add  $16\frac{2}{3}$  and  $5\frac{1}{6}$ .

At sight add:

$$\begin{array}{cccccccccccccccccccc} \frac{1}{2} & \frac{1}{2} & \frac{1}{2} & \frac{1}{2} & \frac{1}{2} & \frac{1}{2} & \frac{1}{2} & \frac{1}{2} & \frac{1}{2} & \frac{1}{2} & \frac{1}{2} & \frac{1}{4} & \frac{3}{4} & \frac{1}{4} & \frac{3}{4} & \frac{1}{4} & \frac{1}{8} & \frac{1}{8} & \frac{1}{8} & \frac{1}{8} \\ \hline \frac{1}{2} & \frac{1}{4} & \frac{3}{4} & \frac{1}{8} & \frac{1}{8} & \frac{2}{8} & \frac{3}{8} & \frac{5}{8} & \frac{5}{8} & \frac{1}{6} & \frac{7}{8} & \frac{1}{8} & \frac{1}{8} & \frac{1}{8} & \frac{3}{8} & \frac{2}{8} & \frac{1}{8} & \frac{3}{8} & \frac{5}{8} & \frac{1}{6} \end{array}$$

6. Mary had 24 words to spell. She spelled  $\frac{2}{3}$  of them correctly. How many words had she wrong?
7. I bought 2 pk. of potatoes at \$.40 a peck, and sold them by the quart at a gain of 1 cent on the quart. Find the selling price of all.
8. I had \$12 and spent \$8. What part of all my money did I spend?

\* See p. 73, ex. 9.

9. A farmer paid \$6 a head for sheep and \$12 a head for hogs. How much did 12 sheep and 10 hogs cost?

10. There are 6 rows of corn in a garden, 5 hills in a row, 4 stalks upon a hill, and 2 ears on a stalk. How many ears of corn are there in the garden?

**Written.**

1. One fifth of 8065 wk. equals how many days?
2. If 980 lb. of flour cost \$30, how much will  $\frac{1}{2}$  of a barrel cost?
3. I sold 18 gal. of cider at \$.18 a pint, gaining \$7. What was the cost?
4. I bought  $17\frac{3}{4}$  lb. of butter at 28 cents a pound. I gave the storekeeper a package containing 100 dimes. How much change did I get?
5. If I sell  $7\frac{3}{8}$  yd. from  $14\frac{3}{8}$  yd., how many yards are left?  

---
6. How much must be added to 83.78 to make 97.3?
7. If a train goes at the rate of  $43\frac{3}{8}$  mi. an hour, how far will it go in 37 hr.?
8. A merchant sold 56 yd. of cloth for \$84, gaining \$14. How much did it cost him per yard?
9. A grocer pays \$74.50 for tea at  $\$ \frac{1}{2}$  per pound. What is the weight of the tea?
10. Reduce  $78\frac{1}{2}$  to an improper fraction. Reduce it to a decimal fraction.

## XXXVII

## Oral.

Rapidly add:

16	23	61	24	22	44	15	29	14	16	45	48	47	29	19
18	24	19	14	13	16	45	12	18	19	21	32	22	21	19

Count by 6's from 4 to 88. Count by 7's from 6 to 104.

1. Change  $7\frac{2}{3}$  to an improper fraction. Change it to a decimal.

2. If 48 is  $\frac{4}{5}$  of the number of marbles James has, how many marbles has he?

3. If hay is \$10 a ton, what part of a ton can be bought for \$8?

4. I bought 1 lb. of candy at the rate of 3 cents an ounce. I then had 2 cents left. How much money had I at first?

5. I had 36 bbl. of flour, and sold  $\frac{4}{5}$  of it at \$5 a barrel. How much did I get for it?

Rapidly subtract:

37	96	84	23	18	27	35	54	43	68	51	108	65	60	75
14	52	54	9	11	10	14	35	38	39	17	36	47	39	24

Count by 8's from 9 to 97. Count by 9's from 7 to 97.

6. At 5 cents each, how many pencils can I buy for .5 of a dollar?

7. How much must I pay for  $\frac{7}{8}$  of a yard of silk at \$1.60 a yard?

8. If 2 boys can make a box in 15 min., how long at the same rate will it take 1 boy to make it?

9. What part of 100 oranges is 80 oranges?

10. How many 9ths are there in  $7\frac{4}{9}$ ?

**Written.**

1. A man possessing at his death \$47,840, gave \$18,755 to each of his two sons and the remainder to his daughter. How much did the daughter receive?

2. A flour merchant bought 1500 bbl. of flour at \$7 a barrel; he sold 800 bbl. at \$10 a barrel and the remainder at \$6 a barrel. How much did he gain?

3. A plantation of 736 A. was sold for \$55,936. What was the price of an acre?

4. Reduce  $\frac{168}{252}$  to lowest terms.

5. Reduce  $86\frac{5}{17}$  to an improper fraction.

6. Reduce  $21\frac{84}{42}$  to a whole or a mixed number.

7. How much will 15 T. of coal cost at \$7 $\frac{1}{2}$  a ton?

8. What is the area in square feet of a floor 27 ft. by 18 ft.? What is the area in square yards?

9. What is the width in feet of a hall that is 36 ft. long and contains 252 sq. ft.?

10. What is the cubical contents of a rectangular solid 22 ft. long, 13 ft. wide, and 5 ft. thick?

**XXXVIII****Oral.**

Rapidly multiply:

16	18	15	14	19	13	12	17	14	16	17	18	19	14	19
<u>3</u>	<u>4</u>	<u>5</u>	<u>5</u>	<u>4</u>	<u>4</u>	<u>9</u>	<u>6</u>	<u>7</u>	<u>5</u>	<u>5</u>	<u>6</u>	<u>8</u>	<u>9</u>	<u>5</u>
15	15	13	12	14	13	15	15	14	13	16	19	18	14	19
<u>9</u>	<u>4</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>6</u>	<u>7</u>	<u>6</u>	<u>5</u>	<u>9</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>6</u>

1. How many days are there in March, April, and May together?

2. How much will 15 oranges cost if 5 oranges cost \$.12?

3. Robert earned 36 cents every day from Monday to Friday, but on Saturday he lost 15 cents. How much did he have Saturday night?

4. How much will 5 doz. eggs cost at 3 cents each?

5. One sixth of Tom's age is 3 yr. How old is he?

Rapidly divide:

$6\overline{)144}$ ;  $3\overline{)180}$ ;  $4\overline{)160}$ ;  $6\overline{)84}$ ;  $5\overline{)95}$ ;  $7\overline{)175}$ ;  
 $15\overline{)360}$ ;  $18\overline{)360}$ ;  $9\overline{)360}$ ;  $8\overline{)360}$ ;  $6\overline{)360}$ ;  $7\overline{)98}$ ;  
 $5\overline{)360}$ ;  $24\overline{)360}$ ;  $4\overline{)360}$ ;  $30\overline{)360}$ ;  $36\overline{)360}$ ;  $60\overline{)350}$ .

6. A tank in which there are 6 gal. of oil is  $\frac{1}{3}$  full. How many gallons does the tank hold?

7. How many minutes are there in  $\frac{3}{4}$  of an hour?

8. Take  $\frac{2}{3}$  of 24 from  $\frac{1}{2}$  of 60.

9. Read each decimal as tenths, then as hundredths: .4; 4.4; .06; .25; 2.5; 9.17; 3.25; 17.08; 83.83.

10. At 80 cents a bushel, how much will 1 bu. 3 pk. of potatoes cost?

Written.

1. Add: \$456.56

881.97

763.78

295.89

978.49

332.85

597.65

424.86

949.97

2. I bought at one time  $5\frac{1}{2}$  lb.

of meat, and at another time  $4\frac{3}{4}$  lb.

How much did all cost at 10 cents a pound?

3. If  $\frac{1}{12}$  of a lot of goods is worth \$360, how much is  $\frac{1}{3}$  of the lot worth?

4. Write in the form of decimal fractions:  $\frac{17}{100}$ ;  $3\frac{4}{10}$ ;  $5\frac{8}{10}$ ;  $6\frac{24}{100}$ ;  $4\frac{5}{100}$ . Add these decimals.



5. Express decimally: ten and twelve hundredths; eighty and five hundred five thousandths; twelve thousandths; fifty and five thousandths; sixty-five thousandths; four hundred six thousandths.

6. From 78,060,004 take 7,006,008

7. How many feet of bordering are needed for a room 18 ft. long and 12 ft. wide? How many yards? How much will it cost at  $12\frac{1}{2}$  cents a yard?

8. How many square feet are there in a piece of land 20 yd. long and 20 ft. wide?

9. How much will  $2\frac{2}{3}$  gal. of vinegar cost at 18 cents a quart?

10. I bought 864 bbl. of flour at \$5.75 a barrel and paid \$2684.15 on account. How much more have I to pay?

### XXXIX

#### Oral.

Rapidly subtract:

46	87	32	46	54	82	48	24	84	42	95	87	69	72	80
<u>29</u>	<u>48</u>	<u>29</u>	<u>28</u>	<u>39</u>	<u>26</u>	<u>14</u>	<u>9</u>	<u>35</u>	<u>28</u>	<u>48</u>	<u>79</u>	<u>38</u>	<u>56</u>	<u>47</u>
62	76	72	89	26	35	27	35	56	42	58	62	53	44	70
<u>38</u>	<u>24</u>	<u>29</u>	<u>44</u>	<u>8</u>	<u>15</u>	<u>14</u>	<u>28</u>	<u>17</u>	<u>17</u>	<u>29</u>	<u>48</u>	<u>37</u>	<u>26</u>	<u>28</u>

1. Jane had 16 yd. of tape and used  $\frac{3}{8}$  of it. How much was left?

2. If the dividend is 56 and the quotient is 7, what number is the divisor?

3. If  $\frac{5}{8}$  of an acre costs \$35, what is the value of the whole acre?

4. A dress cost \$48, and  $\frac{3}{4}$  of that amount is 4 times what was paid for a hat. How much did the hat cost?

5. How many cubic inches are there in a box 4 in. by 3 in. by 5 in.?

Rapidly multiply:

---

11	7	60	9	6	12	40	220	9	90	200	8	11	7
<u>10</u>	<u>5</u>	<u>50</u>	<u>9</u>	<u>3</u>	<u>8</u>	<u>10</u>	<u>60</u>	<u>40</u>	<u>5</u>	<u>40</u>	<u>8</u>	<u>3</u>	<u>6</u>
12	8	40	8	9	7	60	150	13	70	300	7	20	9
<u>20</u>	<u>9</u>	<u>30</u>	<u>3</u>	<u>6</u>	<u>11</u>	<u>12</u>	<u>4</u>	<u>30</u>	<u>6</u>	<u>30</u>	<u>7</u>	<u>5</u>	<u>8</u>

---

6. I sold for \$49 what cost me \$43 $\frac{1}{2}$ . How much did I gain or lose?

7. Reduce  $\frac{45}{64}$  to lowest terms.

8. How much will 5 yd. of wire cost at 2 cents an inch?

9. From the sum of 19 and 7 take their difference.

10. Reduce  $\frac{100}{7}$  to a mixed number.

**Written.**

1. A merchant sold a quantity of pork for \$16,416, thereby gaining \$2092. How much did it cost him?

2. An agent sold 34 lots at \$570 each, and invested the money in an equal number of horses at \$69 and mules at \$45 apiece. How many of each did he buy?

3. A grocer bought 35 bbl. of molasses for \$756 at the rate of 45 cents a gallon. How many gallons were there in each barrel?

4. Reduce  $\frac{416}{632}$  to lowest terms.

5. Reduce  $2\frac{1345}{124}$  to a mixed number.

---

6. How many boxes of tea, each containing 24 lb., at 60 cents a pound must be given in exchange for 30 firkins of butter, of 56 lb. each, at 18 cents a pound?

7. Multiply 16,742 by 3900. Divide 846,132 by 8000.

8. A man having  $95\frac{1}{4}$  gal. of oil sold  $13\frac{3}{8}$  gal. How much had he left?

9. A man bought  $15\frac{1}{2}$  tons of coal at  $\$4\frac{1}{4}$  a ton. What was the total cost of the coal?

10. How much must be paid for 21 books at  $\$9$  a dozen?

### XL

#### Oral.

Rapidly divide:

$7\overline{)28}$ ;  $5\overline{)55}$ ;  $6\overline{)72}$ ;  $9\overline{)90}$ ;  $2\overline{)22}$ ;  $4\overline{)48}$ ;  
 $11\overline{)121}$ ;  $7\overline{)21}$ ;  $12\overline{)96}$ ;  $20\overline{)500}$ ;  $40\overline{)360}$ ;  $40\overline{)280}$ ;  
 $12\overline{)132}$ ;  $10\overline{)1100}$ ;  $12\overline{)84}$ ;  $12\overline{)108}$ ;  $30\overline{)900}$ ;  $50\overline{)250}$ .

1. If 36 bu. of potatoes are worth  $\$27$ , how much are 72 bu. worth?

2. Separate into two factors: 84; 108; 42; 24; 30; 56; 72; 48; 54; 36; 49; 81; 64; 100; 121; 144.

3. How many yards of lace will be needed to edge a table cover 4 yd. long and 3 yd. wide?

4. Change the decimal .8 to a common fraction.

5. How many thousandths does  $\frac{7}{8}$  equal?

Rapidly add:

26	38	32	42	24	30	34	33	44	48	46	72	64	56	48
<u>13</u>	<u>19</u>	<u>16</u>	<u>21</u>	<u>12</u>	<u>15</u>	<u>17</u>	<u>17</u>	<u>22</u>	<u>24</u>	<u>23</u>	<u>36</u>	<u>32</u>	<u>28</u>	<u>20</u>

6. Change  $5\frac{1}{2}$  to an improper fraction.
7. How much will it cost to gild a surface 12 in. by 4 in. at 3 cents a square inch?
8. How much will 48 bu. cost at \$1.25 a bushel?
9. James had 20 yd. of fishing tackle. He lost  $\frac{2}{5}$  of it. How many yards were left? How many feet were left?
10. How many inches around will 2 panes of glass each  $9 \times 7$  in. measure?

### Written.

1. How many square feet are there in a field 125 ft. long and 87 ft. wide? how many square yards?
2. How much will it cost to carpet a room 27 ft. long and 21 ft. wide with carpet 1 yd. wide at \$1.25 a yard?
3. How many feet of fence are required to inclose 2 city lots, each 25 by 100 ft.? (Draw a diagram of the lots.)
4. How many acres are there in a field 80 rd. long and 16 rd. wide?
5. Reduce to decimals having the same denominator: .5; .26; .125; .2; .128; .503; 1.2; .07; 3.05; .132.

- |  |   |
|--|---|
| 6. Add:    41,368<br>54,276<br>61,286<br>47,593<br>62,438<br>74,962<br>52,738<br><hr style="width: 100px; margin-left: 0;"/> | 7. A field of 80 A. produced 2160 bu. of wheat. How much was the average yield per acre?<br>8. A dealer bought a quantity of coal for \$136 $\frac{3}{4}$ and of lumber for \$350 $\frac{3}{4}$ . He sold the coal for \$184 $\frac{1}{2}$ and the lumber for \$416 $\frac{3}{4}$ .<br>What was his whole gain? |
|--|---|

9. How much will 24 $\frac{3}{4}$  lb. of tea cost at \$.84 a pound?
10. Reduce  $\frac{1\frac{3}{8}\frac{1}{2}}{1\frac{3}{8}\frac{1}{2}}$  to lowest terms.

## THIRD MONTH

— daily.

WRITING NUMBERS in orders to 100,000,000,

MENTAL OPERATIONS. Examples given with larger  
ness and accuracy.

Reduction, addition, subtraction, and multiplication,  
multiplicand or the multiplier a whole number,

Adding and writing; reduction to common fractions,  
common fractions to decimals. Addition, sub-  
multiplication. Product to contain not more than 3  
and or multiplier to be a whole number.

Estimate dimensions, cost of fencing of lots, also  
2, 3, 4, or 5 lots. Finding value of one or more lots and  
the value of the whole. Area of rectangles.

W.

ing the business fractions, also applying all tables  
to cover the work of the two preceding months.  
licated by signs.

## XLI

13 15 17 19 21 23 25 27 29 31 33  
12 18 12 18 10 11 12 13 14 15 16

from 4 to 100. Count by 4's from 5 to 101.  
is \$.60 a day and saves \$.17. How much

2. A man worked 480 minutes. How many hours did he work?

3. A farmer had 63 cows,  $\frac{2}{3}$  of which died. How many died? How many were left?

4. Mr. Smith bought 5 bbl. of flour at \$9 a barrel and sold them for \$35. How much did he lose?

5. A boy earned \$.60 a day. He lost \$.15 and spent  $\frac{1}{3}$  of the remainder. How much did he spend? How much had he left?

---

Rapidly add :

45	47	49	51	53	55	57	59	61	63	65	67	69	71	73
<u>22</u>	<u>23</u>	<u>24</u>	<u>25</u>	<u>26</u>	<u>27</u>	<u>28</u>	<u>29</u>	<u>30</u>	<u>61</u>	<u>33</u>	<u>34</u>	<u>35</u>	<u>37</u>	<u>38</u>

Count by 6's from 8 to 86. Count by 7's from 8 to 99.

6. If a bushel of apples costs \$ $\frac{3}{5}$ , how many bushels can I buy for \$180?

7. At \$1.25 each, how much will 24 books cost?

8. A blackboard is 4 ft. wide and 9 ft. long. How many square feet are in the front surface of it?

9. How many dimes will pay for 9 pads at \$.20 each?

10. How many years are there in 72 months?

**Written.**

1. Reduce  $91\frac{3}{5}$  to an improper fraction.

2. Divide 7,164,800 by 498. Prove the answer.

3.  $965.8 + 274.09 - 648.37 = ?$

4. Draw a rectangle 8 in. by 2 in.; divide it into 4 equal parts. Draw another rectangle similar to one of these equal parts and give the dimensions of it.

5. A merchant exchanged 70 bbl. of sugar at \$10.50 per barrel for flour at \$5 a barrel. How many barrels of flour did he receive?

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6. Multiply 596 by  $87\frac{4}{11}$ .

7.  $956 \times 48, + 739 = ?$

8. Find  $\frac{7}{8}$  of 1824.

9. John bought  $9\frac{1}{2}$  lb. of beef at \$.20 a pound. How much change should he get from a \$5 bill?

10. A man worked 112 da. and was paid at the rate of \$15 a week. How much did he earn?

## XLII

### Oral.

Rapidly take from \$1.00:

75¢; 21¢; 54¢; 79¢; 35¢; 56¢; 72¢; 64¢; 62¢; 25¢;  
82¢; 65¢; 36¢; 73¢; 84¢; 47¢; 43¢; 92¢; 52¢; 95¢;  
81¢; 97¢; 83¢; 67¢; 55¢; 59¢; 40¢; 80¢; 68¢; 94¢.

1. How many days are there in September, October, and November together?

2. If you tie  $7\frac{3}{4}$  yd. of rope to a piece  $2\frac{1}{2}$  yd. long, how long is the whole piece, allowing  $\frac{1}{8}$  yd. for the knot?

3. 56 boys are on register in the class;  $\frac{7}{8}$  of them are present. How many boys are absent?

4. If 9 examples are given to a class and James has 6 right, what part of the whole number has he right? How many hundredths has he right?

5. How much will 1 pk. of potatoes cost, if  $\frac{7}{8}$  of a peck costs \$.56?

---

Rapidly take from \$2.00:

85¢; 17¢; \$1.25; \$1.16; 27¢; 38¢; \$1.40; \$1.15;  
27¢; 55¢; \$1.27; \$1.65; 72¢; 89¢; \$1.45; \$1.38;  
56¢; 42¢; \$1.33; \$1.58; 29¢; 63¢; \$1.09; \$1.29.

6. A man built 5 houses on 4 (25 ft.  $\times$  100 ft.) city lots. What was the width of each house?

7. A rug is 9 ft. by 12 ft. How many square feet of floor does it cover? How many feet does it measure around the edge?

8. A piece of ribbon is 1 yd. long and  $1\frac{1}{2}$  in. wide. How many square inches are there in it?

9. How many cubic inches are there in a box 2 in. long, 2 in. wide, and 1 in. high? Find the contents in cubic inches of the crayon box used in the schoolroom.

10. Change  $\frac{33}{12}$  to a mixed number.

#### Written.

1. Reduce  $\frac{288}{604}$  to lowest terms.

2. Reduce  $2\frac{142}{61}$  to a mixed number.

3. A farmer had 100 bu. of wheat. He sold at one time  $35\frac{17}{60}$  bu. and at another time  $43\frac{7}{20}$  bu. How many bushels had he left?

4. Mr. Howe bought  $\frac{1}{2}$  of a piece of cloth containing  $19\frac{3}{4}$  yd. at \$4 $\frac{1}{4}$  a yard. How much did it cost him?

5. If 7 yd. of cloth cost \$13.44, how much will  $\frac{5}{8}$  of a yard cost?

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6. Reduce  $35\frac{7}{11}$  to an improper fraction.

7. Divide 567,146 by 9000.



8. Multiply \$831.70 by 8300.

9. If a certain town uses 35,760 gal. of water in a day, how much at this rate will be required for a year?

10. Four quarters of beef weighed respectively  $146\frac{1}{2}$ ,  $150\frac{7}{8}$ ,  $172\frac{3}{4}$ , and  $174\frac{3}{16}$  lb. What was the entire weight of the four quarters?

### Oral.

### XLIII

Rapidly multiply :

17	25	15	12	12	14	13	13	14	14	20	19	15	18	30
3	4	5	9	11	6	3	7	2	5	7	8	6	7	6
27	36	43	17	40	50	31	17	17	16	30	39	46	57	50
4	5	6	7	60	20	4	4	9	8	9	9	5	6	7

What is 3 times .1? 4 times .2? 6 times .5? 4 times .8? 7 times .3? (In these examples tell the number of decimal places in the multiplicand; in the multiplier. Tell the number of decimal places in the product as compared with multiplier and multiplicand.) What is 7 times .02? 8 times .12? 5 times .06? 4 times .08? 6 times .15? (Tell the number of decimal places in the multiplicand; in the multiplier. Tell the number of decimal places in the product as compared with multiplier and multiplicand.)

1. James had \$.63 on Tuesday, and his mother gave him twice as much on Wednesday. How much had he then?

2. In 1 rd. there are 16.5 ft. Measure off one rod on the class-room floor. How many feet are there in 2 rd.? 3 rd.?

3. Mr. Williams owned .1 of an acre and sold .05 of an acre. How much had he left?

4. John had .3 of a dollar, and his sister .15 of a dollar. How much had both?

5. Change .16 to a common fraction.

Rapidly multiply :

60	50	14	140	12	120	160	17	19	21	24	24	17
<u>4</u>	<u>60</u>	<u>3</u>	<u>30</u>	<u>8</u>	<u>4</u>	<u>5</u>	<u>30</u>	<u>2</u>	<u>50</u>	<u>4</u>	<u>5</u>	<u>50</u>
22	27	23	180	17	160	170	18	29	32	41	38	63
<u>60</u>	<u>3</u>	<u>4</u>	<u>6</u>	<u>6</u>	<u>6</u>	<u>5</u>	<u>3</u>	<u>4</u>	<u>6</u>	<u>7</u>	<u>4</u>	<u>80</u>

6. A board is 15.5 in. long, and another one is just 3 times as long. How long is the second board?

7. If 1 book costs \$1.02, how much will 5 cost at the same rate?

8. Mary had \$.60. She spent \$.40, and her brother gave her \$.30. How much had she then?

9. From 4.5 take 2.6.

10. Change .12 to a common fraction.

Written.

1. Multiply: 3.86 5.48 6.93 14.8 16.9 48.9 56.8  
by 9 7 8 90 70 6 70

2. Add: .75 3. Add: 3.84 4. A dealer bought  
1.6 5.006 127 T. of coal for  
7.23 7.923 \$683.26. What was  
2.5 16.5 the price per ton?  
7.856 2.86 5. What will be the  
.96 1.09 cost of 6 lb. of rice at  
7.536 7.597 7 cents a pound, 20  
1.94 25.23 lb. of sugar at 4 cents

a pound, and 1 pk. of potatoes at 80 cents a bushel?

6. Add seventy-five and twenty-three thousandths, eight and fifty-six hundredths, thirty-seven thousandths, two hundred sixty-five and fifty-four thousandths, seventy-four and seventy-five thousandths, eight and five thousandths.

7. From five and five thousandths subtract five hundred seven thousandths.

8. Mr. Brown's income last year was \$3465. He spent \$2347.76. How much money did he save?

9.  $.434 - .216 = ?$   $1.325 - .684 = ?$   $3.42 - 1.256 = ?$   
 $5.316 - 3.08 = ?$

10. A man deposited in bank \$8752. He drew out at one time \$4234, at another time \$1700, at another \$962, and at another \$49. How much had he remaining in bank?

#### XLIV

Oral.

Rapidly divide:

760 by 10; 890 by 10; 420 by 10; 640 by 10; 800 by 100; 1200 by 100; 6500 by 100; 8700 by 100; 920 by 10; 750 by 10; 40 by 20; 50 by 2; 120 by 6; 120 by 60; 300 by 100; 8000 by 10; 8000 by 100; 56 by 8; 560 by 8; 560 by 80; 950 by 100; 7200 by 100; 8600 by 100.

1. William bought an arithmetic for 15 cents, a quire of paper for 12 cents, and a bottle of ink for 6 cents. What was the cost of all?

2. Margaret is 11 yr. old and Julia 4 yr. younger. What is Julia's age?

3. John worked 5 da. for 15 cents a day, and Norman worked 4 da. for 20 cents a day. How much more than John did Norman have?

4. If a man travels 40 mi. in 8 hr., how far will he travel in 6 hr. ?

5. At 8 dimes a foot, how many dollars will 3 yd. 1 ft. of iron railing cost ? \_\_\_\_\_

Rapidly divide:

45 by 9; by 5; by 3.

36 by 4; by 6; by 9; by 12.

80 by 10; by 8; by 4; by 5.

6. If a man puts \$200 at interest, and receives  $\frac{3}{20}$  of it annually for his use, how many dollars does he receive ?

7. Six tenths of 100 is how many times 5 ?

8. A man plowed 36 A. of his farm. Three fourths of this was just equal to  $\frac{1}{3}$  of the whole number of acres in his farm. How many acres were there in his farm ?

9. Reduce to a whole or a mixed number:  $\frac{25}{5}$ ;  $\frac{42}{6}$ ;  $\frac{14}{10}$ ;  $\frac{36}{10}$ ;  $\frac{64}{10}$ .

10. In  $12\frac{1}{3}$  how many thirds are there ? In  $7\frac{2}{3}$  ?

Written.

1. Add:  $74.64\frac{5}{8}$

$896.56\frac{5}{8}$

$7698.67$

$7.22\frac{2}{3}$

$896.09\frac{1}{2}$

$74.08\frac{1}{8}$

$9600.19\frac{5}{8}$

$7.94$

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2.  $79,689\frac{3}{8} - 28,734\frac{1}{2} = ?$

3. Multiply  $8765$  by  $87\frac{5}{8}$ .

4. Reduce  $\frac{1680}{2016}$  to its lowest terms.

5. A lady had \$375 and spent  $\frac{4}{5}$  of her money for a coat and the remainder for a shawl. How much did each cost ? \_\_\_\_\_

6.  $\frac{12888}{87} = ?$   $\frac{5224}{12} = ?$   $\frac{3666}{18} = ?$

7. Find  $\frac{7}{8}$  of 1848;  $\frac{3}{4}$  of 2040;  $\frac{2}{3}$  of 1624.

8.  $590.07 - 287.6 = ?$

9. Draw a plot 28 ft. by 16 ft. on a scale of one foot equal to  $\frac{1}{4}$  of an inch. Find the area of the plot in square feet.

10. How many yards of carpet 1 yd. wide will be needed to carpet a room 27 ft. long and 16 ft. wide?

### XLV

#### Oral.

Rapidly answer :

$$33 + 28, + 9, - 30, + 15 = ? \quad 84 + 26, + 15, - 70, + 25 = ?$$

$$9 + 12, + 15, - 25 = ? \quad 18 + 7, + 5, \times 7, + 1, + 9 = ?$$

1. Change  $4\frac{2}{3}$  to a mixed number.

2. How much did I gain, if I sold for \$50 what cost me  $\$47\frac{1}{2}$ ?

3. How many square inches are there in the top of a box 12 in. by 9 in.?

4. I had \$12 and spent \$8. What part of the money did I spend?

5. How many square feet are there in the top of a table 1 yd. by 2 ft.?

Rapidly answer :

$$7 \times 7, + 3, + 2 + 6, + 3, = ? \quad 7 + 9 + 13 + 6 + 4 = ?$$

$$7 + 8 + 9 + 30 + 18 + 29 = ? \quad (10 + 4) + 7, + 20 = ?$$

$$64 + 8, \times 3, + 6, - 10, \times 2, + 7, + 5, - 12, - 7, + 12, - 3, + 4, \\ + 6, - 10, + 8, + 5 = ?$$

6. A blackboard is 10 ft. long and 6 ft. wide. How many square feet are there in it?

7. One fourth of 28 is contained how many times in 35?

8. How much will 9 books cost at  $\$1.33\frac{1}{3}$  each?
9. Multiply .8 by 6; 9 by .3; 1.2 by 6; 53 by .2.
10. How much will it cost to fence a city lot 25 ft. by 100 ft. at 25 cents a foot?

**Written.**

1. Indicate the work for the following examples by using the proper signs. Do not solve them.

How much must be paid for 32 bbl., if 8 bbl. cost \$40?

How much must be paid for 9 sheep, if 36 sheep are worth \$140?

In 15 quires of paper there are 360 sheets. How many sheets are there in 5 quires?

2. A farmer raised 360 bu. of wheat on 12 A. of land. How much wheat at this rate could he raise on 15 A.? (Indicate the solution by signs, and then solve the problem.)

3. A drover had 350 sheep. He sold to one man 120 sheep and to another 75, and then bought enough to make his number 500. How many did he buy?

4. What is the sum of fourteen and eight tenths, one hundred twenty and thirty-five hundredths, twenty-five thousandths, and four and five hundredths?

5. Multiply 427 by .32.

---

6. At  $\$1.12\frac{1}{2}$  a foot, how much will 324 feet of wire cost?

7. A 160-acre farm consists of five fields, the first containing  $17\frac{3}{4}$  A., the second  $29\frac{1}{4}$  A., the third  $35\frac{7}{10}$  A., the fourth  $22\frac{3}{4}$  A. How many acres are there in the fifth field?

8. A man worked 6 days at \$2 $\frac{1}{2}$  a day, his son 5 days at \$1 $\frac{3}{4}$ , his daughter 4 days at \$ $\frac{4}{5}$ . How much did they earn all together?

9. I sold land at \$46 an acre, and received for it \$4508. How much would I have received for it had I sold it at \$58 an acre?

10. Divide 46,020 by 290. Prove the answer.

### XLVI

#### Oral.

Rapidly read as decimals:  $\frac{1}{4}$ ;  $\frac{1}{2}$ ;  $\frac{1}{5}$ ;  $\frac{3}{4}$ ;  $\frac{2}{5}$ ;  $\frac{1}{3}$ ;  $\frac{2}{3}$ ;  $\frac{4}{5}$ ;  $\frac{5}{8}$ ;  $\frac{3}{8}$ .

Rapidly read as common fractions: .15; .12; .2; .20; .64; .45; .75; .125; .05; .35.

1. If 18 books cost \$3, how much will 6 books cost?

2. If  $\frac{5}{8}$  of my money is 25 cents, how much money have I?

3. A boy having 12 oranges bought 6 more and then sold 7. How many had he left?

4. A grocer buys 16 quarts of chestnuts from one boy and  $1\frac{3}{4}$  times as many quarts from another boy. How many quarts does he buy from the second boy?

5. A boy helped a man to put a wire fence around a plot which measured 12 ft. by 10 ft. How many feet of wire did they use?

Rapidly add :

4.5	2.7	3.25	4.80	2.5	4.1	3.2	14	15	17.0	60
2.3	4.3	2.15	3.25	1.5	3.0	6.3	17	21	16.5	50

6. John bought  $\frac{1}{4}$  of a pound of ham at \$.20 a pound and a box of crackers for a dime. How much money did he spend?

7. Change  $7\frac{3}{4}$  to an improper fraction.
8. Reduce  $7\frac{3}{4}$  to a mixed number.
9. Which is greater,  $2\frac{1}{2}$  ft. or 31 in.? What is the difference in inches?
10. 8 is what part of 64?

**Written.**

1. Add: 32,568  
41,367  
52,738  
31,645  
74,962  
34,467  
41,328  
76,249
2. Express decimally: four tenths; seven tenths; two hundredths; five hundredths; nine hundredths; twelve hundredths; fourteen hundredths; six thousandths; two hundred seven thousandths;  
 $\frac{7}{10}$ ;  $\frac{21}{100}$ ;  $\frac{138}{1000}$ ;  $7\frac{6}{10}$ ;  $37\frac{65}{100}$ ;  $100\frac{4}{100}$ ;  
 $49\frac{8}{1000}$ ;  $\frac{3}{10}$ ;  $\frac{30}{100}$ ;  $\frac{300}{1000}$ .

3. Find the sum of .14, .004, 7.2, 3.65, .2, .364, 1.43, .07, and .075.

4. I received \$261 for 9 weeks' work. How much should I receive at that rate for 17 weeks' work?

5. From a cistern containing 512.3 gal. 26.09 gal. were drawn. How many gallons remained in the well?

6. Add: 76,832  
98,654  
87,589  
23,456  
78,901  
34,567  
89,238  
96,743
7. Divide 7,645,324 by 653. Prove the answer.
8. How many cubic feet are there in a stick of timber 2 ft. square and 40 ft. long?
9. How many cubic inches are there in a box  $6 \times 7 \times 10$  in.?
10. How many quart bottles can

be filled from a barrel of molasses holding 32 gal.?



## XLVII

## Oral.

Rapidly find:

$\frac{3}{4}$  of 48;  $\frac{5}{8}$  of 30;  $\frac{7}{8}$  of 28;  $\frac{2}{3}$  of 45;  $\frac{3}{8}$  of 24;  $\frac{4}{5}$  of 72;  
 $\frac{6}{7}$  of 35;  $\frac{5}{9}$  of 48;  $\frac{7}{9}$  of 63;  $\frac{2}{3}$  of 45;  $\frac{4}{7}$  of 42;  $\frac{9}{10}$  of 80;  
 $\frac{8}{9}$  of 20;  $\frac{5}{8}$  of 18;  $\frac{2}{5}$  of 20;  $\frac{3}{5}$  of 25;  $\frac{9}{10}$  of 70;  $\frac{7}{9}$  of 72;  
 $\frac{6}{7}$  of 49;  $\frac{2}{3}$  of 33;  $\frac{5}{7}$  of 63;  $\frac{8}{11}$  of 66;  $\frac{7}{12}$  of 84;  $\frac{8}{11}$  of 44.

1. How much must I pay for 20 eggs at 24 cents a dozen?

2. A boy with a dollar bill bought  $6\frac{1}{2}$  lb. of dates at 8 cents a pound, and with the rest of the money bought oranges at the rate of 3 cents apiece. How many oranges did he buy?

3. How many pints are there in 3 qt. and 1 pt.? How many quarts are there in 4 gal. and 2 qt.? How many quarts are there in 2 pk. and 3 qt.? How many feet are there in 6 yd. and 2 ft.?

4. How much will a gallon and a pint of milk cost at 6 cents a quart?

5. How much will 3 qt. of berries cost at 80 cents a peck?

Rapidly find:

$\frac{5}{12}$  of: 84; 72; 96; 24; 108; 48; 36; 60; 120.  
 $\frac{2}{3}$  of 16;  $\frac{3}{4}$  of 24;  $\frac{5}{8}$  of 36;  $\frac{3}{8}$  of 32;  $\frac{5}{9}$  of 27;  $\frac{6}{7}$  of 12;  
 $\frac{2}{3}$  of 18;  $\frac{3}{4}$  of 36;  $\frac{4}{5}$  of 20;  $\frac{3}{7}$  of 21;  $\frac{4}{5}$  of 30;  $\frac{7}{10}$  of 90;  
 $\frac{8}{9}$  of 81;  $\frac{3}{7}$  of 49;  $\frac{4}{5}$  of 63;  $\frac{3}{8}$  of 72.

6. A man paid \$64 for a wagon and  $\frac{1}{8}$  as much for a robe. How much did the two together cost?

7. How many feet is it around a schoolroom that is 23 ft. long and 15 ft. wide?

8. How many two-cent stamps can you purchase with three quarters of a dollar?

9. An apple woman had 100 apples to sell at 1 cent apiece. She sold 10 cents' worth to one man, 24 cents' worth to another man, and 36 cents' worth to another. How many apples had she left in her basket?

10. How many feet does a boy walk in taking 40 paces if every pace measures  $2\frac{1}{2}$  ft.? how many yards?

**Written.**

1. Write the following: seven million; eighty-four million; two hundred sixty-five thousand; six hundred five million; ninety million; seven thousand four hundred; four million thirty thousand four hundred six; three hundred thousand seventy; twenty-seven thousand forty.

2. From one million three hundred thousand take ninety-eight thousand nine.

3. Multiply 79,605 by 9000; 3690 by 6008.

4. William is  $3\frac{7}{12}$  yr. older than John, and John is  $4\frac{2}{3}$  yr. older than James, who is  $12\frac{2}{3}$  yr. old. How old is John? How old is William?

5.  $2\frac{1}{8}$  yd. +  $3\frac{5}{8}$  yd. +  $\frac{5}{8}$  yd. equals how many yards, feet, and inches?

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6. From a board  $8\frac{3}{4}$  ft. long a piece  $3\frac{1}{2}$  ft. long was sawed. What was the length of the remaining part?

7. Find the cost of 3 pk. 5 qt. of apples at 20 cents a peck.

8. How many tenths, hundredths, and thousandths are there in .625? .834? .906? .007? .076? .079? .025? .05? .62? .07 $\frac{1}{2}$ ?

9. A miller mixes 24 bu. of oats at 25 cents a bushel with 26 bu. of rye at 50 cents a bushel. How much a bushel is the mixture worth?

10. A farmer bought 12 sheep at  $\$3\frac{1}{2}$  apiece. He sold 10 of them for enough to pay the cost of all. How much did he receive for each sheep?

### XLVIII

#### Oral.

Rapidly answer:

$$100 - 2, - 4, - 3, - 5, - 2, - 3, - 1, - 4, - 5, - 3, - 2, - 4 = ?$$

$$100 - 3, - 5, - 4, - 6, - 2, - 4, - 5, - 2, - 6, - 4, - 3, - 5 = ?$$

$$100 - 7, - 4, - 6, - 5, - 6, - 5, - 6, - 4, - 5, - 6, - 5, - 7 = ?$$

$$100 - 4, - 7, - 5, - 8, - 7, - 3, - 6, - 5, - 7, - 2, - 6, - 4 = ?$$

$$21 + 6, - 9, + 8, - 7, + 8, + 9, - 6, + 7, - 8, + 9, - 5, + 6 = ?$$

$$14 + 9, - 8, + 7, + 8, + 9, - 6, + 7, + 5, + 8, - 9, - 8, + 7 = ?$$

1. Mary picks  $6\frac{1}{2}$  qt. of berries every day for 6 da. How many pecks and quarts does she pick?

2. How much will  $\frac{1}{8}$  of a bushel of corn cost at 6 cents a quart?

3. If  $\frac{3}{4}$  of a yard of velvet costs 72 cents, how much will  $\frac{1}{4}$  of a yard cost?

4. What will be the cost of 9 yd. of ribbon at  $8\frac{2}{3}$  cents a yard?

5. Reduce  $\frac{60}{144}$  to its lowest terms.

Rapidly take from \$1.00:

\$.26; \$.37; \$.19; \$.29; \$.54; \$.24; \$.34; \$.18; \$.43;  
\$.21; \$.39; \$.71; \$.85; \$.15; \$.65; \$.67; \$.62; \$.84.

6. A board is 10 ft. long and a foot wide. How many square inches are there in the surface?
7. How much fencing is needed for a lot 20 ft. by 100 ft.?
8. How much fencing is needed for a lot 25 ft. square?
9. If  $\frac{1}{4}$  of a yard costs 60 cents, how much will 1 yd. cost?
10. If  $\frac{5}{8}$  of a dozen peaches costs 20 cents, how much will 1 doz. cost?

**Written.**

1. Fifteen barrels of flour costing \$4.25 a barrel were emptied into 28-lb. sacks, which were sold at \$.75 a sack. How much was gained?
  2. A dealer bought 120 marbles at the rate of 5 cents per score, and sold them at 4 cents a dozen. What was the gain or loss?
  3. I had 678 A. of land, and sold  $\frac{1}{8}$  of it at one time and  $\frac{3}{8}$  of the remainder at another time. How many acres did I sell? How many acres had I left?
  4. A butcher buys a live ox weighing 1200 lb. at 6 cents per pound. When killed and ready for market, its weight is  $\frac{3}{4}$  of the live weight. How much is the butcher's profit, if he sells the meat at 15 cents per pound?
  5. I had 96 A. of land. I sold  $\frac{5}{8}$  of it for \$120 an acre and the remainder for \$97 an acre. How much did I receive for all?
- 
6. A man had \$2964 and gave  $\frac{1}{3}$  of it to his wife and divided the remainder equally between his two daughters. How many dollars did each of the three receive?

7. If  $\frac{3}{4}$  of a man's weight is 186 pounds, what is  $\frac{3}{8}$  of his weight? (Compare  $\frac{3}{4}$  and  $\frac{3}{8}$ .)

8. If I have 84 books and give away 72, what part of the whole number do I give away? What part do I keep?

9. I sold my house for \$2945.72 which was  $\frac{3}{8}$  of what it cost me. How much did it cost me? How much did I lose?

10. If  $\frac{5}{8}$  of a dozen oranges cost 20 cents, how much will  $12\frac{3}{4}$  dozen cost?

### XLIX

#### Oral.

#### Rapidly answer:

$36 + 40 = ?$	$100 - 21 = ?$	$27 + 50 = ?$	$89 - 50 = ?$
$40 + 40 = ?$	$90 - 72 = ?$	$28 + 60 = ?$	$70 - 17 = ?$
$30 + 25 = ?$	$80 - 36 = ?$	$50 + 37 = ?$	$100 - 27 = ?$
$72 + 20 = ?$	$90 - 45 = ?$	$45 + 30 = ?$	$60 - 34 = ?$
$60 + 32 = ?$	$100 - 62 = ?$	$70 + 29 = ?$	$80 - 25 = ?$
$20 + 78 = ?$	$70 - 39 = ?$	$21 + 21 = ?$	$90 - 18 = ?$
$30 + 49 = ?$	$80 - 27 = ?$	$32 + 32 = ?$	$100 - 23 = ?$
$50 + 24 = ?$	$70 - 33 = ?$	$41 + 23 = ?$	$80 - 39 = ?$
$20 + 38 = ?$	$90 - 16 = ?$	$43 + 24 = ?$	$70 - 44 = ?$
$40 + 39 = ?$	$89 - 40 = ?$	$52 + 18 = ?$	$50 - 37 = ?$

1. If it takes 3 men 9 da. to build a fence, how long will it take one man?

2. If it takes 2 boys 20 min. to shovel the snow from the walk, how many minutes will it take 1 boy? What part of an hour will it take him?

3. A train started with 100 passengers. After 65 more got on and 40 got off, how many passengers would there be on the train?

4. How much will 24 hats cost at  $\$.33\frac{1}{2}$  each?

5. If 36 yd. of velvet cost \$72, how much will 12 yd. cost?

Rapidly answer :

$64 + 36 = ?$	$90 - 56 = ?$	$29 + 14 = ?$	$59 - 48 = ?$
$73 + 27 = ?$	$80 - 37 = ?$	$36 + 18 = ?$	$67 - 27 = ?$
$84 + 36 = ?$	$60 - 18 = ?$	$59 + 22 = ?$	$85 - 55 = ?$
$27 + 93 = ?$	$90 - 53 = ?$	$38 + 24 = ?$	$72 - 32 = ?$
$38 + 52 = ?$	$100 - 76 = ?$	$36 + 35 = ?$	$98 - 68 = ?$
$42 + 21 = ?$	$90 - 19 = ?$	$17 + 14 = ?$	$75 - 45 = ?$
$35 + 24 = ?$	$35 - 25 = ?$	$18 + 13 = ?$	$25 - 14 = ?$
$27 + 32 = ?$	$83 - 53 = ?$	$16 + 17 = ?$	$36 - 13 = ?$

6. If 7 yd. of lace cost \$.42, how many yards can be bought for \$1.26?

7. I bought 2 doz. eggs for \$.60 and sold them at \$.03 apiece. How much did I gain or lose on all?

8. In a class of 50 children, 15 received 100 % in arithmetic. What part of the class was perfect?

9. Mary had two examples wrong, which was  $\frac{1}{5}$  of the entire number given. How many examples were there? What per cent did she have right?

10. If  $\frac{1}{2}$  of a yard of silk costs \$.50, how much will  $\frac{1}{4}$  of a yard cost? (Compare  $\frac{1}{2}$  and  $\frac{1}{4}$ .)

Written.

- Add:  $56,934\frac{3}{8}$
- From  $95,739\frac{3}{8}$  subtract  $38,647\frac{1}{4}$ .
- How much will  $59\frac{3}{8}$  yd. of silk cost at \$1.26 a yard?
- Change  $273\frac{3}{5}$  to an improper fraction.

5. In  $\frac{1}{2}$  of a tank there were 37 gal. How many gallons were there in the whole tank?

6. Multiply 8693 by  $59\frac{3}{4}$ .

7. Divide 28,469 by 956. Prove the answer.

8. How much will it cost to inclose with a fence 4 adjacent lots each 25 by 75 ft. at \$.45 a foot?

9. I had 558 chickens and sold  $\frac{4}{5}$  of them. How many chickens had I left?

10. From a cask containing 713 gal.  $56\frac{4}{5}$  gal. were drawn. How many were left?

### L

#### Oral.

Rapidly answer :

$20 \times 4 = ?$	$800 \div 4 = ?$	$321 \times 3 = ?$	$770 \div 7 = ?$
$10 \times 8 = ?$	$40 \div 4 = ?$	$223 \times 2 = ?$	$462 \div 2 = ?$
$200 \times 4 = ?$	$840 \div 4 = ?$	$103 \times 3 = ?$	$848 \div 4 = ?$
$212 \times 4 = ?$	$900 \div 3 = ?$	$202 \times 4 = ?$	$936 \div 3 = ?$
$40 \times 8 = ?$	$60 \div 3 = ?$	$112 \times 4 = ?$	$844 \div 4 = ?$
$300 \times 2 = ?$	$960 \div 3 = ?$	$303 \times 3 = ?$	$684 \div 2 = ?$
$343 \times 2 = ?$	$240 \div 2 = ?$	$234 \times 2 = ?$	$206 \div 2 = ?$
$300 \times 2 = ?$	$630 \div 3 = ?$	$202 \times 4 = ?$	$555 \div 5 = ?$
$312 \times 5 = ?$	$550 \div 5 = ?$	$423 \times 3 = ?$	$862 \div 2 = ?$
$302 \times 3 = ?$	$840 \div 8 = ?$	$345 \times 2 = ?$	$355 \div 5 = ?$

1. How many bouquets can I make of 6 doz. roses if I put 8 roses in each bouquet?

2. When apples sell at 2 cents apiece and oranges at 3 cents apiece, how much shall I have to pay for a dozen of each?

3. How many eggs are 22 eggs and  $2\frac{1}{2}$  doz. eggs?

4. If the distance around a tree is 3 times the distance through it, what is the distance through a tree which measures 45 ft. around?

5. What is the cost of a cover for a space 9 in. by 7 in. at 2¢ a square inch? \_\_\_\_\_

Rapidly answer :

$85 \times 2 = ?$	$170 \div 2 = ?$	$65 \times 9 = ?$	$357 \div 7 = ?$
$27 \times 11 = ?$	$104 \div 4 = ?$	$94 \times 7 = ?$	$486 \div 6 = ?$
$89 \times 4 = ?$	$190 \div 2 = ?$	$32 \times 8 = ?$	$186 \div 3 = ?$
$76 \times 5 = ?$	$260 \div 5 = ?$	$96 \times 7 = ?$	$208 \div 4 = ?$
$99 \times 6 = ?$	$330 \div 6 = ?$	$53 \times 6 = ?$	$364 \div 7 = ?$
$42 \times 7 = ?$	$140 \div 2 = ?$	$84 \times 9 = ?$	$432 \div 8 = ?$
$54 \times 6 = ?$	$156 \div 2 = ?$	$73 \times 5 = ?$	$688 \div 8 = ?$
$48 \times 4 = ?$	$210 \div 3 = ?$	$92 \times 8 = ?$	$640 \div 4 = ?$
$32 \times 9 = ?$	$216 \div 3 = ?$	$72 \times 7 = ?$	$728 \div 2 = ?$
$84 \times 8 = ?$	$648 \div 8 = ?$	$57 \times 8 = ?$	$455 \div 5 = ?$

6. If 3 lb. of coffee cost 60 cents, how much will  $\frac{3}{4}$  of a pound cost?

7. If 3 pt. of milk are used in a family every day, how many quarts will be used in 2 wk.?

8. If you pay \$.25 for a dozen oranges, and sell them at 4 cents apiece, how much do you gain?

9. How much lace will it take to border a handkerchief 7 in. by 12 in.?

10. Find  $\frac{1}{12}$  of 360.

Written.

1. Add 596.8, 3487.96, 80.09, 7284.61, 739.5, 6.06, 27.125, 89.5, and 68.563.



2. From the sum of 739 and 218 take the difference between these numbers.

3. At \$45 apiece, how many cows can I buy for \$1665?

4. Find the cost of fencing a baseball field 30 rd. long by 20 rd. wide at \$.62 $\frac{1}{2}$  a rod.

5. When gold is worth \$21 per ounce, how many ounces will pay for 15 horses at \$105 each?

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6. Add 60,198, 7256, 75,986, 7374, 69,989, 9354, 38,697 and 4389.

7. Add  $16\frac{1}{4}$ ,  $8\frac{3}{8}$ ,  $34\frac{5}{8}$ ,  $45\frac{3}{8}$ ,  $4\frac{1}{12}$ .

8. Divide 213,531 by 653. Prove the answer.

9. From 3896 take 257.625.

10. I had \$1200 and spent  $\frac{3}{8}$  of it. I then lost  $\frac{3}{4}$  of what was left. How much money did I lose?

## LI

### Oral.

Beginning with 9, rapidly add by 6's to 81.

Beginning with 7, rapidly add by 4's to 55.

$$6 + 7 + 8 + 5 + 4 + 9 + 8 + 5 + 3 + 4 + 2 + 5 + 9 = ?$$

$$7 + 11 + 8 + 6 + 4 + 7 + 2 + 3 + 4 + 7 + 8 + 14 + 20 = ?$$

$$1 + 2 + 7 + 8 + 2 + 8 + 7 + 6 + 9 + 5 + 4 + 6 + 15 = ?$$

1. How many grains are there in 1 pound Avoirdupois? One grain is what part of a pound? Compare a grain with a pound. What weight is used in weighing sugar? coffee? What is Avoirdupois Weight used for weighing? How many ounces are there in a pound?

How many hundredweight are there in a pound? How many ounces are there in 3 lb.? in 5 lb.? in 7 lb.? How many grains are there in an ounce? How many ounces are there in 2 lb. 6 oz.? in 4 lb. 10 oz.? How much will 1 T. 5 cwt. of hay cost, if 5 cwt. cost \$3?

2. In 160 oz. how many pounds are there? In 2 cwt. how many pounds are there?

3. How many pounds are there in 3 cwt.? in 6 cwt.?

4. If  $\frac{5}{12}$  of a year's wages amounts to \$25, how much will a year's wages amount to?

5. I sold a cow for \$25, which was  $\frac{5}{4}$  of what it cost me. How much did it cost me?

Beginning with 12, rapidly add by 8's to 84.

Beginning with 13, rapidly add by 9's to 94.

$$8 + 8 + 4 + 5 + 7 + 4 + 5 + 4 + 15 + 16 + 8 + 7 + 3 = ?$$

$$9 + 8 + 3 + 5 + 6 + 7 + 8 + 9 + 3 + 4 + 7 + 8 + 4 = ?$$

$$7 + 8 + 9 + 12 + 6 + 13 + 4 + 5 + 6 + 7 + 1 + 7 + 8 = ?$$

6. How many pounds are there in 3 cwt.? in 5 cwt.?

7. How many grains are there in 2 lb.? in 4 lb.?

8. Three fourths of 16 is how many times 6?

9. I bought a watch and chain; for the chain I paid \$15, which was  $\frac{1}{4}$  of what I paid for the watch. How much did they both cost?

10. A speculator bought some pork for \$90, which was  $\frac{9}{11}$  of what he sold it for. How much did he gain?

**Written.**

1. How much will 2 cwt. 10 lb. of an article cost at 6 cents a pound?

2. A man having  $\$27\frac{3}{4}$  received  $\$16\frac{2}{10}$  for work, and paid out  $\$18\frac{1}{2}$ . How much had he then?

3. A farmer buys a horse for  $\$140$ , and sells it at an advance of  $\frac{3}{20}$  of the cost. What is the selling price?

4. The sum of two numbers is  $12\frac{7}{8}$ ; one of the numbers is  $7\frac{1}{2}$ . What is the other number?

5. Find the cost of 8 rolls of carpet,  $42\frac{1}{2}$  yd. in a roll, at 91 cents per yard. \_\_\_\_\_

6. Divide 343,926 by 250.

7. A man has  $\$16,000$ . He buys 2 houses for  $\$4500$  and some land at  $\$140$  per acre. How many acres does he get?

8. There are 7000 Troy grains in a pound Avoirdupois. How many Avoirdupois pounds are there in 118,125 Troy grains?

9. How many hours are there in 12,950 seconds?

10. A man paid  $\$9000$  for his farm,  $\$8476$  for a new house, and  $\$873$  for his barn, and then sold them for  $\$19,600$ . What was his gain?

**LII****Oral.**

Rapidly add:

32	16	32	93	63	28	30	400	700	31	60	32	57	99
<u>45</u>	<u>22</u>	<u>47</u>	<u>16</u>	<u>91</u>	<u>39</u>	<u>70</u>	<u>200</u>	<u>300</u>	<u>12</u>	<u>47</u>	<u>20</u>	<u>40</u>	<u>83</u>
$\$2.25$	$\$1.12$	$\$1.10$	$\$6.50$	8.2	$\$1.70$	9.7	$\$4.50$	$\$5.60$					
<u>2.00</u>	<u>2.14</u>	<u>1.15</u>	<u>6.50</u>	<u>3.5</u>	<u>.25</u>	<u>8.9</u>	<u>.30</u>	<u>.40</u>					

1. At 7 cents a quart, how much will 1 pk. of apples cost?
2. At \$.12 $\frac{1}{2}$  a yard, how much will 24 yd. of lawn cost?
3. There were 64 lb. in a barrel of flour. A merchant sold  $\frac{5}{8}$  of this quantity. How many pounds did he sell?
4. Reduce  $\frac{4}{8}$  to lowest terms.
5. How much will 2 lb. and 1 oz. of meat cost at \$.02 an ounce?

Rapidly add:

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52	41	64	43	54	33	64	75	46	44	59	68	76	43
19	18	29	27	37	16	26	29	27	19	48	57	66	38
99	77	44	87	72	63	51	2.9	3.6	8.1	7.1	5.9	83	5.1
88	66	29	65	19	24	39	1.9	1.9	5.2	9.4	3.4	72	6.9

6. From  $\frac{1}{2}$  of 24 take  $\frac{1}{3}$  of 15.
7. Two boys had 45 cents each. One spent  $\frac{4}{5}$  of his money and the other spent  $\frac{1}{3}$  of his money. Which had the more money left, and how much had he?
8. My agent is paid 2 cents for every dollar's worth of goods that he sells. How much must I pay him for selling \$300 worth?
9. How many petals have 35 pansies?
10. If 6 pairs of fur gloves cost \$30, how many pairs of gloves can you get for \$90?

Written.

1. Mr. Brown sold 3450 bu. of wheat, then bought 1200 bu., and then had 1750 bu. How many bushels had he at first?

2. Mr. Harris sold from his farm 265 bu. of wheat at \$.99 per bushel; 400 bu. of corn at \$.65 per bushel; 130 bu. of oats at \$.52 per bushel; and 7 T. of hay at \$8.50 per ton. How much did he realize from the farm?

3. Multiply 43,721 by 3200. Divide 93,673 by 900. Prove the answers.

4. Reduce to improper fractions:  $345\frac{1}{5}$ ;  $500\frac{7}{11}$ . What is an improper fraction?

5. Reduce to mixed numbers:  $\frac{2315}{88}$ ;  $\frac{22418}{180}$ . What is a mixed number?

6. Reduce to lowest terms:  $\frac{176}{220}$ ;  $\frac{288}{480}$ . When is a fraction in its lowest terms?

7. Peter has \$55, George  $\$8\frac{1}{10}$ , Jacob  $\$2\frac{3}{4}$ , and their father  $\$27\frac{1}{2}$ . Find the sum, after changing the fractions to cents.

8. A certain farm is valued at \$8000, and Mr. Myer owns  $\frac{1}{5}$  of it. What is the value of his share of the farm?

9. Mr. Knox bought  $\frac{1}{4}$  of a ton of hay for \$12. At this rate, what would be the cost of 6 T.?

10. Express decimally: thirty-five thousandths; twelve thousandths; fifty-five hundredths; eighty thousandths.

### LIII

#### Oral.

Rapidly add:

5	5	6	7	8	2	3	5	5	6	7	8	9	1	2	3	4	5	7	4
8	9	0	1	2	6	7	8	8	9	3	4	3	4	5	6	7	8	8	5
<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>9</u>	<u>6</u>

1. I bought a doll for 50 cents, and spent 35 cents for its dress. For how much must I sell it, dressed, to gain 25 cents?

2. If  $8\frac{2}{3}$  oranges are cut into thirds, how many thirds will there be?

3. If it takes 1 boy  $\frac{1}{2}$  hr. to shine three pairs of shoes, how long will it take 2 boys at the same rate?

4. If 1 boy can make a box in an hour, how many minutes will it take 3 boys?

5. How many hours a week does a laborer work at the rate of 8 hr. per day?

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Rapidly add :

8	9	1	2	3	4	5	6	7	8	9	1	2	3	4	5	7	8	7	2
1	2	3	4	5	6	7	8	9	4	3	3	4	5	6	6	8	9	4	9
9	1	2	3	4	5	6	7	8	9	1	7	7	7	7	6	8	9	9	6

6. If 12 yd. of dimity cost 16 cents, what is the cost of 3 yd.?

7. I bought a bicycle for \$100, and after spending \$25 on it for repairs, sold it for \$85. How much did I lose?

8. I bought 2 pencils at 3 cents each and half a dozen erasers at 48 cents a dozen. How much change should I receive from 50 cents?

9. I bought a knife for 17 cents, and when I sold it I lost 9 cents. For how much did I sell it?

10. At  $12\frac{1}{2}$  cents each, what is the cost of 4 doz. pencils?

**Written.**

1. If  $\frac{3}{8}$  of a lot cost \$120, how much would the whole lot cost? (Illustrate by a diagram like the following.)

\$40	\$40	\$40					
$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$

2. After spending  $\frac{3}{8}$  of my money, I find I have \$200 left. How much had I at first? (Illustrate by a diagram.)

3. How much money had I at first, if, after spending  $\frac{5}{7}$  of it, I had \$32 left? (Illustrate by a diagram.)

4. A man owns one house worth \$4500 and another worth \$6600. He receives as yearly rent for the first house .12 of its value and for the second house .09 of its value. How much does he receive a month for both houses?

5. Add the product of 84 and 208 to the sum of those numbers.

6. Find the cost of 16 lb. of sugar if 8 lb. cost 50 cents;  $7\frac{1}{2}$  qt. of milk if 5 qt. cost \$.40; 27 lemons at \$.36 a dozen.

7. If 20 men can build a road in 180 da., how many days will it take 60 men?

8. If I pay \$5 for 2.5 yd. of cloth, how much must I pay for 7.5 yd. of the same kind? (Compare 2.5 and 7.5.)

9. Express with aid of the decimal point:  $1\frac{1}{10}$ ;  $1\frac{10}{100}$ ;  $10\frac{1}{100}$ ;  $100\frac{1}{10}$ ;  $10\frac{1}{1000}$ ;  $50\frac{500}{1000}$ ;  $\frac{43}{1000}$ ;  $\frac{8}{10}$ ;  $\frac{25}{1000}$ .

10. Add .407, 3.086, 70.194, 6.05, 207.8, 9.004, and 80.307.

## LIV

## Oral.

Rapidly add; then subtract:

78	89	90	24	35	46	57	68	79	80	25	36	58	69	44
5	6	7	8	9	4	5	6	7	8	9	4	4	5	7

Count by 6's from 15 to 111. Count by 7's from 11 to 102.

1. A boy gave  $\frac{1}{3}$  of his marbles away and had 20 left. How many had he at first?

2. There is a difference of 30 yr. in the ages of a mother and her daughter. The mother is 52 years old. How old is the daughter?

3. If a hat costs  $\frac{1}{5}$  of a dollar, how much will 20 hats cost?

4. I spent  $\frac{1}{4}$  of my money and had 16 cents left. How much did I have at first?

5. Five sevenths of 49 is what part of 70?

Make use of the examples given at the beginning of this lesson for rapid multiplication and for division.

6. I spent  $\frac{1}{3}$  of my money and had \$16 left. How much had I at first?

7. I had 27 cents and spent  $\frac{1}{3}$  of it. How much had I left?

8. I had 64 cents and spent 8 cents. What part of my money had I left?

9. A man is 56 yr. old and his wife's age is  $\frac{1}{3}$  of his age. How old is his wife?

10. Five eighths of 40 is what part of 50?



**Written.**

1. In a car load of fruit there were 560 pineapples. Mr. Jones bought  $\frac{1}{3}$  of the lot for \$5.60. How much did he pay apiece for them? If he sold them 2 for 25 cents, what was his gain?

2. A rectangular piece of land is 150 rd. long and 50 rd. wide. How many rods of fence will it take to inclose it?

3. If  $\frac{1}{2}$  of a certain number is 2576, what is  $\frac{3}{4}$  of the same number?

4. A brick wall is 72 ft. long, 12 ft. high, and 3 ft. thick. How many cubic feet are there in the wall?

5. Change  $4\frac{8}{15}$ ;  $2\frac{7}{15}$  to mixed numbers; change  $19\frac{4}{15}$ ;  $86\frac{3}{4}$  to improper fractions.

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6. What part of a bushel is 16 qt.? 8 qt.? 4 qt.? 10 qt.? 12 qt.?

7. I bought a house and lot. The lot cost me \$2500, which was  $\frac{5}{12}$  as much as I paid for the house. How much did I pay for the house? How much did both cost me?

8. How much will it cost to dig a trench 15 ft. by 8 ft. by 6 ft. at \$.09 a cubic foot? How much would the same work cost if the price were  $\frac{1}{3}$  greater?

9. How many years are there in 7095 da.?

10. A man bought 236.5 yd. of muslin. He sold 125.25 yd. from the piece. How many yards had he left?

## LV

## Oral.

Rapidly read these fractions in the lowest terms :

$\frac{6}{9}$ ;  $\frac{6}{8}$ ;  $\frac{4}{8}$ ;  $\frac{3}{15}$ ;  $\frac{5}{15}$ ;  $\frac{2}{20}$ ;  $\frac{2}{10}$ ;  $\frac{3}{18}$ ;  $\frac{8}{120}$ ;  $\frac{5}{25}$ ;  $\frac{5}{10}$ ;  $\frac{50}{100}$ ;  $\frac{8}{12}$ ;  
 $\frac{4}{8}$ ;  $\frac{2}{4}$ ;  $\frac{3}{9}$ ;  $\frac{6}{10}$ ;  $\frac{6}{12}$ ;  $\frac{8}{24}$ ;  $\frac{9}{18}$ ;  $\frac{9}{27}$ ;  $\frac{12}{27}$ ;  $\frac{16}{20}$ ;  $\frac{6}{36}$ ;  $\frac{25}{75}$ ;  $\frac{7}{49}$ .

1. Mary has written  $\frac{1}{4}$  of her words and still has 18 words to write. How many has she already written?

2. How much will 9 yd. of cloth cost when 7 yd. cost \$28?

3. It is 27 minutes past 1 o'clock. How many minutes before 2 o'clock is it?

4. If I put 3.5 gal. of sirup in a barrel, how many gallons must I put in another barrel to have in it three times as much as the first?

5. Find 5 times 2.5; 2.5 times 20; 30 times 2.7.

Rapidly read as whole or as mixed numbers :

$\frac{25}{6}$ ;  $\frac{8}{3}$ ;  $\frac{7}{2}$ ;  $\frac{9}{8}$ ;  $\frac{14}{5}$ ;  $\frac{16}{5}$ ;  $\frac{16}{4}$ ;  $\frac{25}{2}$ ;  $\frac{72}{6}$ ;  $\frac{18}{3}$ ;  $\frac{17}{16}$ ;  $\frac{17}{12}$ ;  $\frac{28}{4}$ ;  
 $\frac{9}{8}$ ;  $\frac{8}{8}$ ;  $\frac{9}{8}$ ;  $\frac{8}{4}$ ;  $\frac{27}{8}$ ;  $\frac{27}{9}$ ;  $\frac{27}{4}$ ;  $\frac{32}{8}$ ;  $\frac{48}{4}$ ;  $\frac{48}{6}$ ;  $\frac{28}{5}$ ;  $\frac{24}{7}$ ;  $\frac{19}{3}$ .

6. At 30 cents a yard, how much will  $3\frac{1}{2}$  yd. of ribbon cost?

7. At \$12 a ton, how much will  $7\frac{3}{4}$  T. of hay cost?

8. If it takes a pound of sugar to every pint of juice in making currant jelly, how much will the sugar cost, at 4 cents a pound, to jellify  $1\frac{1}{2}$  gal. of juice?

9. When 8 qt. of beans cost \$1.20, find the price per bushel. (Compare 8 qt. with 1 bu.)

10. I have a flower bed containing 64 sq. ft. How long is one side of it?

**Written.**

1. Add: 38,697  
807,340  
27,869  
730,898  
8,600,732  
795,486  
8,756  
439  
75,063  
704,928  
38,269  
69,784
2. From 8,076,431 subtract 2,688,782.
3. A farmer sold 125 bu. of oats at  $\$.37\frac{1}{2}$  a bushel, and received in payment 75 lb. of sugar at  $\$.09$  a pound, 12 lb. of tea at  $\$.60$  a pound, and the remainder in cash. How much cash did he receive?
4. A coal dealer bought 570.5 T. of coal and sold at different times  $120\frac{1}{2}$  T. and  $114\frac{3}{8}$  T. How much had he left?

5. A man bought a farm for \$6736.75, which was \$325 $\frac{2}{3}$  less than he sold it for. For how much did he sell it?

6. Multiply 4237 by 4250. Prove the answer.

7. Divide 48,763 by 700.

8. Mr. Miller had \$6000. He gave each of his four children \$1250. How much money had he left?

9. If Mr. Jordan's field of 16 acres should yield 27 bu. of wheat to the acre, how much would the grain be worth at  $\$.98$  per bushel?

10. Find the value of  $(\$.87\frac{1}{2} + \$14\frac{3}{8}) - (\$5.10 - \$.75)$ .

**LVI****Oral.**

Rapidly read as improper fractions:

$1\frac{1}{2}$ ;  $3\frac{2}{3}$ ;  $2\frac{1}{3}$ ;  $12\frac{1}{4}$ ;  $1\frac{3}{4}$ ;  $5\frac{1}{2}$ ;  $10\frac{3}{8}$ ;  $7\frac{1}{2}$ ;  $7\frac{3}{8}$ ;  $8\frac{1}{4}$ ;  $6\frac{1}{4}$ ;  $5\frac{1}{2}$ ;  $4\frac{3}{4}$ ;  $9\frac{2}{3}$ ;  $8\frac{8}{10}$ ;  $12\frac{2}{5}$ ;  $9\frac{3}{4}$ ;  $7\frac{1}{4}$ ;  $12\frac{1}{9}$ ;  $6\frac{5}{8}$ ;  $6\frac{3}{8}$ ;  $5\frac{2}{3}$ ;  $7\frac{3}{8}$ ;  $8\frac{3}{4}$ .

1. A drover had 15 horses in one pasture, 13 in another, and 9 in another. How many horses had he?

2. A farmer sold a cow for \$22 that cost him \$30. How much did he lose by the bargain?

3. How much less than 64 is  $25 + 20$ ?

4. If 8 men can do a piece of work in 7 days, how many days will it take 1 man to do it at that rate?

5. How many are 4 times 20 plus 3 times 10?

Rapidly read these fractions as 24ths:

$\frac{1}{2}; \frac{3}{4}; \frac{1}{4}; \frac{3}{8}; \frac{1}{8}; \frac{1}{12}; \frac{1}{6}; \frac{5}{8}; \frac{5}{12}; \frac{7}{12}; \frac{6}{8}; \frac{4}{8}; \frac{1}{8}; \frac{3}{8}; \frac{5}{8};$   
 $\frac{7}{8}; \frac{8}{8}; \frac{4}{6}; \frac{4}{8}; \frac{4}{12}; \frac{9}{12}; \frac{2}{2}; \frac{3}{8}; \frac{12}{12}; \frac{11}{12}; \frac{2}{6}; \frac{6}{8}; \frac{7}{8}; \frac{2}{8}; \frac{3}{8}.$

6. If a boy earns 60 cents in 5 days, how many cents will he earn in 20 days?

7. How long will it take 7 men to reap a field working at the rate at which it takes 14 men 2 days to reap it?

8. If 2 ships are 120 mi. apart and sail toward each other, one at the rate of 9 mi. an hour and the other at the rate of 11 mi. an hour, in how many hours will they meet?

9.  $16 \times ? = 8 \times 8.$

10. Subtract 10 from 6 times 8, to the remainder add 4, divide the sum by 6, multiply the quotient by 11, subtract 7 from the product, divide the remainder by 10, add 30 to the quotient, and tell the answer.

### Written.

1. A town lot was bought for \$785. A house was built upon it which cost \$2350. For how much must the property be sold to gain \$500?

2. Add horizontally 34,268, 28,135, 6724, 5962, 306.

3. Mr. Howard began business with \$4000. The first year he lost \$1450, the second year he gained \$675, the third year he gained \$2285.68, and the fourth year he gained \$1750. How much was he worth at the end of the fourth year?

4. At an average cost of \$4675 per mile, how much would it cost to build 150 mi. of railroad?

5. A shoe dealer bought 27 cases of shoes, each case containing 20 pairs, at \$1.35 a pair. What was the amount of the bill?

6. If the combined wealth of 2135 men is \$6,419,945, what is the average wealth of each man?

7. How many farms of 50 A. each can be made from a tract of land containing 1200 A.?

8. Find the value of  $7 \times (184 - \overline{36 \div 4} - (\overline{9 \times 3} + 4) + 24 \times 3)$ .

9. A farmer wished to pay a mortgage of \$300. To lift the mortgage he sold 180 bu. of wheat at \$.90 per bushel and clover seed at \$3 per bushel. How many bushels of clover seed did he sell?

10. How many bushels of oats at 35 cents a bushel must be given in exchange for 5 cd. of wood at \$3.15 a cord?

## LVII

### Oral.

Rapidly read as hundredths:

$\frac{1}{2}$ ;  $\frac{1}{4}$ ;  $\frac{3}{4}$ ;  $\frac{1}{8}$ ;  $\frac{3}{8}$ ;  $\frac{5}{8}$ ;  $\frac{1}{16}$ ;  $\frac{3}{16}$ ;  $\frac{5}{16}$ ;  $\frac{7}{16}$ ;  $\frac{1}{32}$ ;  $\frac{1}{8}$ ;  $\frac{1}{16}$ ;  $\frac{1}{4}$ .

1. Separate into two factors: 36; 24; 72; 84; 63; 48; 108; 42.

2. How many ounces are there in 4 lb. 8 oz. ?
  3. How many ounces are there in 3 lb. of coffee ?
  4. If 8 oz. of tea cost four dimes, how much will 2 lb. cost ?
  5. In 100 in. how many yards, feet, and inches are there ?
- 

Rapidly read as common fractions, in their lowest terms :

.25 ; .12 $\frac{1}{2}$  ; .8 ; .6 ; .33 $\frac{1}{3}$  ; .30 ; .40 ; .12 ; .45 ; .66 $\frac{2}{3}$  ; .75 ; .62 $\frac{1}{2}$  ; .5 ; .9 ; .87 $\frac{1}{2}$  ; .35 ; .60 ; .55 ; .65 ; .37 $\frac{1}{2}$ .

6. How many square feet are there in a plot of ground 20 ft. by 30 ft. ?
7. How much will it cost to fence a plot like that in example 6 at \$.02 a foot ?
8. How many cubic inches are there in a block of stone 2 ft. by 8 in. by 4 in. ?
9. How much will 6 gal. of oil cost at 15 cents a quart ?
10. In 80 pt. how many pecks are there ?

### Written.

1. Reduce  $640\frac{5}{18}$  to an improper fraction.
2. Reduce to a mixed number  $2\frac{1563}{5000}$ .
3. Reduce  $\frac{13}{20}$  to 40ths. Reduce  $2\frac{72}{124}$  to lowest terms.
4. Find the sum of  $\frac{5}{8}$ ,  $\frac{3}{4}$ ,  $\frac{5}{8}$ , and  $1\frac{1}{8}$ .
5. A merchant sold 5 pieces of cloth containing  $28\frac{3}{4}$ ,  $26\frac{1}{8}$ ,  $27\frac{3}{8}$ ,  $30\frac{1}{2}$ , and  $32\frac{5}{8}$  yd. respectively. How many yards in all did he sell ?
6. Mr. King's lot contains an acre of land. If he should sell  $\frac{7}{10}$  of an acre to one man and  $\frac{1}{5}$  of an acre to another, how many acres would remain ?

7. Rob and Henry have together  $1\frac{1}{4}$  bu. of chestnuts. Rob's share is  $\frac{7}{8}$  of a bushel. How much is Henry's share?

8. If a ton of hay is worth \$18, how much is  $\frac{3}{4}$  of a ton worth?

9. How much must be paid for  $20\frac{3}{4}$  bu. of apples at \$.62 a bushel?

10. At \$5 $\frac{3}{4}$  a yard, how much will 87 yd. of broadcloth cost?

### LVIII

#### Oral.

Rapidly answer :

$46 + 31 = ?$	$57 - 34 = ?$	$29 + 17 = ?$	$39 - 19 = ?$
$35 + 22 = ?$	$37 - 27 = ?$	$7 + 37 = ?$	$41 - 30 = ?$
$35 + 55 = ?$	$43 - 30 = ?$	$14 + 39 = ?$	$41 - 36 = ?$
$40 + 36 = ?$	$43 - 32 = ?$	$48 + 31 = ?$	$96 - 81 = ?$
$19 + 20 = ?$	$29 - 17 = ?$	$56 + 41 = ?$	$46 - 10 = ?$
$60 + 72 = ?$	$54 - 31 = ?$	$75 + 60 = ?$	$46 - 19 = ?$
$48 + 30 = ?$	$67 - 45 = ?$	$75 + 62 = ?$	$38 - 25 = ?$
$13 + 25 = ?$	$75 - 25 = ?$	$16 + 19 = ?$	$45 - 30 = ?$
$29 + 24 = ?$	$89 - 70 = ?$	$43 + 30 = ?$	$45 - 37 = ?$
$64 + 49 = ?$	$89 - 74 = ?$	$43 + 37 = ?$	$72 - 63 = ?$

1. How many days are there from March 1 to May 10, inclusive?

2. How much will 3 doz. lemons cost at the rate of 3 for 5 cents?

3. What is  $\frac{1}{20}$  of 60;  $\frac{4}{5}$  of 60;  $\frac{1}{3}$  of 36;  $\frac{7}{8}$  of 36?

4. What is  $\frac{1}{4}$  of 32? of 40? of 48?

5. A drover having 60 sheep sold  $\frac{1}{4}$  of them at one time and  $\frac{1}{5}$  at another time. How many had he left?

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Rapidly answer :

$28 + 35 = ?$	$57 - 34 = ?$	$29 + 17 = ?$	$39 - 19 = ?$
$35 + 36 = ?$	$39 - 27 = ?$	$7 + 37 = ?$	$41 - 30 = ?$
$36 + 48 = ?$	$43 - 30 = ?$	$14 + 39 = ?$	$41 - 36 = ?$
$48 + 28 = ?$	$43 - 32 = ?$	$48 + 31 = ?$	$96 - 81 = ?$
$28 + 34 = ?$	$29 - 17 = ?$	$56 + 41 = ?$	$46 - 10 = ?$
$34 + 47 = ?$	$54 - 21 = ?$	$75 + 60 = ?$	$49 - 16 = ?$
$41 + 36 = ?$	$67 - 45 = ?$	$75 + 62 = ?$	$38 - 25 = ?$
$42 + 56 = ?$	$75 - 25 = ?$	$16 + 19 = ?$	$45 - 30 = ?$
$53 + 19 = ?$	$89 - 70 = ?$	$43 + 30 = ?$	$45 - 37 = ?$
$19 + 46 = ?$	$89 - 74 = ?$	$43 + 37 = ?$	$72 - 63 = ?$

6. In  $3\frac{1}{2}$  how many sevenths are there ?
7. If 10 lb. of sugar cost 40 cents, what part of 40 cents will 3 lb. cost ?
8. What is the difference between  $\frac{7}{8}$  of 64 and  $\frac{5}{8}$  of 81 ?
9. How much will  $\frac{5}{8}$  of a bushel of chestnuts cost at 10 cents a quart ?
10. James has 49 marbles and Robert has  $\frac{2}{7}$  as many lacking 5. How many has Robert ?

Written.

1. If a boy should spend  $\$ \frac{3}{4}$  daily, in how many days would he spend \$21 ?
2. A house was bought for \$5000 and sold for  $\frac{1}{4}$  above cost. For how much was it sold ?
3. Mr. Marks had \$1280. He bought goods with  $\frac{5}{8}$  of it and a horse with  $\frac{1}{3}$  of the remainder. How much money had he left ?
4. Write in words: .426; .534; 3.127; 72.40; 678.5; .003,



5. Add .5, 3.8, .605, 3.25, 4.5, .01, 1.8, .22, 1.635, and .043.

---

6. From a cistern containing 500 bbl. of water 187.075 bbl. were pumped out. How many barrels of water remained in the cistern?

7. A farmer sold 41.36 bu. of wheat at \$1.25 a bushel. How much did he receive for it?

8. A dealer bought 1048 cd. of wood at \$3.37½ a cord. How much did he pay for it?

9. Multiply 8736 by 412. Prove the answer.

10. Divide 141,637 by 510. Prove the answer.

### LIX

#### Oral.

Rapidly multiply; then divide:

87	31	42	53	64	75	86	97	30	41	52	63	74	85	21
<u>5</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>5</u>

Count by 8's from 11 to 99.

Count by 9's from 14 to 104.

1. If a vessel sails 12 mi. an hour, how many times 9 mi. will she sail in  $\frac{3}{4}$  of a day?

2. What will be the cost of a hogshead of molasses, if  $\frac{3}{4}$  of a hogshead costs \$36?

3. Five twelfths of 72 is how many times 3?

4. A pole stands 12 ft. in the water, and the part in the water is  $\frac{1}{3}$  of the length of the pole. How long is the pole?

5. Three fourths of  $16 = \frac{3}{4}$  of what number?

---

Rapidly multiply; then divide:

98	20	31	42	53	64	86	97	22	33	44	55	66	88	77
<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>4</u>	<u>5</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>4</u>	<u>6</u>	<u>6</u>

Count by 6's from 15 to 99.

Count by 7's from 15 to 99.

6. In  $10\frac{3}{8}$  how many eighths are there?
7. In  $11\frac{1}{7}$  how many units are there?
8. Express the value of  $2\frac{5}{8}$  by a mixed number.
9. In  $\frac{5}{6}$  how many fifty-sixths are there?
10. How many eighths equal  $2\frac{3}{4}$ ?

Written.

1. How many square feet are there in a floor 25 ft. long and 20 ft. wide?
  2. How many square rods are there in a field 40 rd. long and 18 rd. wide?
  3. How many acres are there in a square farm each of whose sides is 120 rd.?
  4. How much will it cost to carpet a room 25 by 15 ft. with carpet a yard wide at 60 cents a yard?
  5. My building lot is 128 ft. long and  $\frac{1}{4}$  as wide. How many square feet does it contain?
- 
6. How many feet is it around a lot 184 ft. long and 72 ft. wide?
  7. How much will it cost to fence the lot (in example 6) at 25 cents per yard?
  8. My garden is 6 rd. wide and 10 rd. long. How much will it cost to fence it at 50 cents per yard?

9. If a room is 27 ft. wide and 36 ft. long, how many square yards are there in the ceiling?

10. How much will it cost to plaster the ceiling (in example 9) at 27 cents per square yard?

Oral.

LX

Rapidly answer :

$$8 \times 7, - 6, + 5, + 25, + 7, \times 20 = ?$$

$$18 \times 5, + 2, - 5, + 8, + 12 \times 8 = ?$$

$$9 \times 8, + 6, + 13, \times 5, + 2, \times 4 = ?$$

1. Reduce  $\frac{4}{5}$  to its lowest terms.
2. Reduce  $\frac{1}{2}$  and  $\frac{5}{7}$  to the same denominator.
3. If I sold  $\frac{3}{5}$  of an acre to one man,  $\frac{2}{5}$  to another, and  $\frac{7}{15}$  to another, how much did I sell to all?
4. Harvey bought a sled for  $62\frac{1}{2}$  cents and sold it for  $12\frac{1}{2}$  cents more than he gave for it. How much did he receive for it?
5. From a jug of molasses containing 1 gal.,  $\frac{3}{4}$  of a quart was used. How much was left?

Rapidly answer :

$$18, \times 5, + 6, + 8, \times 12, - 44, + 8 = ?$$

$$4 \times 5, + 1, + 7, \times 5, + 2, + 6 = ?$$

$$6 \times 7, + 9, - 3, + 8, \times 6, + 4 = ?$$

$$8 \times 5, + 2, + 5, \times 6, + 4, + 7 = ?$$

6. If I put  $15\frac{1}{2}$  dollars in the bank at one time, how much must I afterwards put in to make the sum 20 dollars?
7. At  $\frac{3}{5}$  of a dime a pound, how much will 15 lb. of nails cost?
8. I bought 6 bu. of corn at  $\$ \frac{5}{8}$  a bushel and had  $\$4$  left. How much money had I at first?

9. If a quart of molasses costs 18 cents, how much will 4 gal. cost at the same rate?

10. What will be the cost of 12 lb. of rice at  $6\frac{1}{4}$  cents a pound?

**Written.**

1. My flower bed is 36 ft. long and  $\frac{1}{4}$  as wide. How many square feet does it contain?

2. How many plants can I plant in this flower bed  $\frac{1}{2}$  ft. from the edge and 1 ft. apart? (Illustrate by diagram.)

3. How many cubic inches are there in 57 cu. ft?

4. How many cubic yards are there in 2425 cu. ft.?

5. How many cubic inches does a prism 9 in. wide, 14 in. long, and 17 in. high contain?

---

6. A bin is 9 ft. wide, 13 ft. long, and 4 ft. deep. How many cubic feet does it contain?

7. Find the number of cubic yards of soil to be removed in digging a cellar 9 ft. deep, 12 ft. wide, and 21 ft. long.

8. Find the number of cubic yards of soil to be removed in digging a ditch 2 yd. wide, 3 yd. deep, and 320 yd. long.

9. When 8 yd. of cloth cost \$15.75, how much will 40 yd. cost? (Indicate the operations by signs before working the example.)

10. A farmer feeds 16 bu. of corn daily to his hogs. How many days will 880 bu. last? (Indicate the operation by signs, before working the example.)

## FOURTH MONTH

**RAPID DRILLS**—daily.

**READING AND WRITING NUMBERS**—continued.

**THE FUNDAMENTAL OPERATIONS**—to secure quickness and accuracy.

**FRACTIONS.** Reduction, addition, subtraction, and multiplication, continued. Definitions of terms used.

**DECIMALS.** Reading and writing. Reduction, addition, subtraction, multiplication, and division, with divisor a whole number.

**MEASUREMENTS.** Estimate dimensions of familiar objects. Reduction of denominate numbers. Finding what part one denominate number is of another. (Easy problems given.) Areas of surfaces, fencing, etc.

**TABLES.** Review.

**BILLS.** Bills made out and receipted. The model having date, name and address, and business of the maker; name and address of the debtor.

**PROBLEMS.** To cover the work of the grade. Explanations to be given and operations to be indicated by signs.

### LXI

**Oral.**

**Rapidly add:**

8	9	1	2	3	4	5	6	7	8	9	1	2	4	3	5	5	8	7	8
1	2	3	4	5	6	7	8	9	7	2	3	9	5	6	7	7	8	8	6
9	1	2	3	4	5	6	7	8	7	3	7	7	4	5	5	9	8	8	9

Rapidly give the answer:  $4)\$1.16$ ;  $4)16$  ft.;  $4)16$  rd.;  
 $4)16$  tenths;  $4)16$  hundredths;  $4).16$ ;  $4)1.6$ ;  $6)2.4$ ;  
 $6).36$ ;  $3).048$ ;  $6).054$ ;  $9).045$ ;  $7)1.47$ .

1. If 72 cents is divided among 8 boys, how much does each receive?

2. Divide .08 by 4; .72 by 6; .004 by 2.

3. How many bottles each containing 1 pt. will be required to hold 1 gal.?

4. How much will 60 in. of copper wire cost at 20 cents a foot?

5. If 1 yd. costs 75 cents, what part of a yard can I buy for 25 cents?

Rapidly add:

6	5	9	4	8	4	6	4	9	7	8	8	9	3	7	4	8	6	3	6
5	4	4	6	4	5	4	8	8	8	3	4	3	7	4	6	6	7	6	9
4	7	6	2	5	3	8	4	8	7	4	5	7	5	6	3	7	3	5	4
<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>

6. Divide .25 by 5; .032 by 4; .56 by 8.

7. How many quart bottles can be filled from a barrel of molasses holding 32 gal.?

8. How many square inches are there in a rectangular piece 2 in. by 3 in.?

9. What is the difference in square feet between 9 ft. square and 9 sq. ft.?

10. A boy worked 2 hr. on each school day and 5 hr. on Saturday for 6 cents per hour. How much did he earn per week?

Written.

1. Add  $16\frac{1}{4}$ ,  $8\frac{2}{3}$ ,  $34\frac{5}{8}$ ,  $458\frac{3}{8}$ , and  $24\frac{1}{2}$ .

2.  $59\frac{2}{3}$  equals what improper fraction?

3. Add 908.6, 75.17, 8.08, 6050.01, 7968.9, 831, 70.07.

4.  $8674\frac{1}{3} - 5287\frac{2}{3} = ?$
5. Multiply 948 by  $79\frac{3}{4}$ .  
\_\_\_\_\_
6. If 125 bu. of oats cost \$62.50, find the cost of 1 bu.
7. Find the cost of 1 lb., if 35 lb. of sugar cost \$2.80.
8. If 144 bu. of wheat cost \$168.48, what is the cost of 1 bu.?
9. Add \$164.37 $\frac{1}{2}$ , \$57.62 $\frac{1}{2}$ , \$5.18 $\frac{3}{4}$ , and \$27.125.
10. Divide 2,460,574 by 735.

## LXII

## Oral.

Rapidly add; then subtract:

52	50	86	88	90	20	22	24	26	28	30	32	34	36	38
25	24	21	23	25	9	10	11	12	13	14	15	16	17	18

Count by 3's from 2 to 101. Count by 4's from 2 to 102.

1. A grocer had 100 pineapples and sold  $\frac{7}{10}$  of them. How many were sold? How many were left?

2. At 75 cents a pound for tea, how much will 16 lb. be worth?

3. Reduce  $\frac{120}{160}$  to lowest terms.

4. A boy had \$ $\frac{1}{4}$  and then earned \$ $\frac{3}{8}$ . How many cents had he then?

5. From the sum of 20 and 12 subtract their difference.  
\_\_\_\_\_

Rapidly add; then subtract:

54	56	58	60	62	64	66	68	70	35	36	36	38	39	40
26	27	28	29	30	31	32	33	34	12	14	16	18	20	21

Count by 5's from 6 to 96. Count by 6's from 8 to 98.

6. How many inches of tape are required around a towel 6 in. by 9 in.?

7. I bought 3 loaves of bread at 5 cents a loaf and 2 lb. of butter at 40 cents a pound. How much change should I get from a two-dollar bill?

8. There are 56 children in one class and  $\frac{5}{8}$  of them are boys. How many girls are there in the class?

9. If 11 pencils cost 25 cents, how much will 44 pencils cost?

10. How many cubic inches does a box  $4 \times 3 \times 5$  inches contain?

Written.

Form of bill:

NEW YORK, May 1, 1910.

Mrs. WALTER HAYES,  
128 Fifth Avenue.

*Bought of* JOHN MACE & Co.

DRY GOODS MERCHANTS,

Terms Cash.

115 Church Street, New York City.

1910							
April	7	15 yd. cashmere	@ \$1.25	18	75	.	
	15	20 " black silk	@ .98	19	60		
		5 " lining	@ .15		75		
	21	8½ " broadcloth	@ \$2.50	21	25	60	35
		May 5, 1910. Received payment,					
		JOHN MACE & Co.					
		per J. K.					



1. Put into bill form and receipt the following: New York, July 5, 1910, Chas. Post, 10 W. 29th Street, New York, bought of Adams & Howe, West Street, New York City, 250 lb. butter at \$.28 $\frac{1}{2}$ ; 16 lb. coffee at \$.28; 240 lb. sugar at \$.08; 25 lb. tea at \$.25; 3 baskets of peaches at \$.35; 1 box of Fairy soap at \$4.25.

2. Put into bill form, find the amount, and receipt the bill: Use your mother's or your father's name as the buyer, and your grocer's name as the seller. 5 lb. of tea at 62 $\frac{1}{2}$  cents; 3 sacks of flour at 95 cents; 40 lb. sugar at 7 cents; 8 $\frac{3}{4}$  lb. of cheese at 14 cents; 6 lb. of starch at 6 $\frac{1}{4}$  cents. Date it with to-day's date.

3. Make into bill form and receipt the following: A. S. Wilson, Madison, N.J., bought June 10, 1909, of E. J. Denning & Co., 300 Broadway, New York, 15 yd. of muslin at 16 cents; 12 yd. of calico at 8 cents; 16 yd. of silk at 87 $\frac{1}{2}$  cents; 6 yd. of white flannel at 50 cents; 18 yd. Canton flannel at 27 cents; 4 spools cotton thread at 5 cents.

4. A flour merchant bought 150 bbl. of flour at \$5 $\frac{3}{4}$  per barrel. He sold 125 bbl. for \$6 $\frac{1}{4}$  each and the remainder for \$5 $\frac{1}{4}$  per barrel. How much did he gain?

5. How much will 75.125 A. of land cost at \$75 an acre?

---

6. New York, May 31, 1910, Jas. Rowland bought of Benj. Wakeman & Co., 20 W. 125th Street, New York 16 lb. tea at \$.85; 18 lb. coffee at \$.27 $\frac{1}{2}$ ; 12 lb. rice at \$.09 $\frac{1}{2}$ ; 2 boxes of raisins at \$.95; 1 kit mackerel at \$3.75;  $\frac{1}{2}$  bbl. of "A" sugar, 130 lb., at \$.06 $\frac{3}{4}$ . Put this in bill form, find the amount, and receipt the bill.

7. W. Warren & Co., 30th Street and 6th Avenue, New York, sold to Mrs. H. C. Kay, 33 W. 29th Street, New York, July 7, 1909, 2 soup tureens at \$1.35; 4 sauce tureens at 65 cents; 2 pitchers at 55 cents; and 4 dishes at 35 cents. Make out and receipt the bill.

8. A man bought a farm of 148 A. at \$67 per acre. He paid \$7850 in cash, and gave 19 head of cattle at \$35 per head. How much remained unpaid?

9. If  $\frac{3}{4}$  of a yard of cloth cost \$2.40, how many yards can be bought for \$19.20?

10. What is the value of 84 bales of cotton containing 425 lb. each, at  $28\frac{1}{2}$  cents a pound?

**Oral.****LXIII**

Rapidly find  $\frac{3}{4}$  of each of the following numbers:

12; 15; 48; 18; 27; 36.

Rapidly multiply by  $1\frac{1}{2}$ : 10; 12; 20; 24; 18; 16; 22.

1. If I buy 3 apples for 5 cents, how much must I pay for 1 doz.?

2. In a class of 50 children 15 received 100% in arithmetic. What part of the class was perfect?

3. After using  $\frac{1}{4}$  of a yard of velvet, a lady had  $\frac{7}{8}$  of a yard left. How much had she at first?

4. If a boy can make 2 boxes in 5 min., how many at that rate can he make in 1 hr.? in 3 hr.?

5. If  $\frac{1}{2}$  of a yard of ribbon costs \$.04, how much will  $2\frac{1}{4}$  yd. cost?

---

Rapidly find  $\frac{3}{4}$  of each of the following numbers:

16; 8; 12; 20; 36; 20.

Rapidly multiply by  $1\frac{1}{3}$ : 15; 18; 27; 20; 9; 3; 24.

6. How many steps, counting 2 ft. to a step, will a boy take in walking around a room 8 yd. long and 4 yd. wide?

7. I bought 2 pecks of potatoes at \$.40 a peck and sold them at a gain of 1 cent on each quart. For how much did I sell them?

8. Mary had 24 words to spell. She spelled  $\frac{2}{3}$  of them correctly. What part of the whole number did she misspell?

9. If there are 100 pages in  $\frac{4}{5}$  of a book, how many pages are there in the whole book?

10. A child received a gift of \$5 which she divided among her four sisters and herself. How much did she keep?

#### Written.

1. How much will it cost to slate the walls for 9 blackboards at 40 cents a square yard, each blackboard being 27 ft. long and 3 ft. high?

2. How much will it cost to cement a cellar bottom 36 ft. long by  $25\frac{1}{2}$  ft. wide at 25 cents a square yard?

3. Find the cost of fencing a rectangular field 80 rd. long and 36 rd. wide at 65 cents a rod.

4. A broker's office is 20 ft. long, 10 ft. wide, and 15 ft. high. How many cubic feet of air does it contain?

5. Find the cost of a block of granite 4 ft. long, 3 ft. wide, and 2.5 ft. thick at \$2.50 per cubic foot.

6. How much will it cost to dig a pit 6 ft. deep and 3 ft. square at \$1 per cubic yard?

7. How many feet of space are there in a tank 4 ft. deep and 2 ft. square at the bottom?

8. At 6 cents a quart, how many bushels of beans can be bought for \$2.88?

9. A grocer sells  $5\frac{1}{4}$  lb. cheese at 12 cents a pound. How much does he receive for it?

10. If a boy earns \$1.25 in 6 da., how many weeks, excluding Sundays, will it take him to earn \$75?

## LXIV

## Oral.

Rapidly answer :

What part of 7 is 1? What part is 3? What part is 4? What part is 5? Five is what part of 8? of 7? of 9? What part of 9 qt. is 3 qt.? of 8 pk. is 5 pk.? of 4 gal. is 3 gal.? A pint is what part of a quart? A pint is what part of 3 qt.? of a peck? of a bushel? What part of a gallon is 1 qt.? 3 qt.? What part of a gallon is 1 pt.? What part is 2 pt.? What part is 4 pt.? A gill is what part of a pint? of a quart? of a gallon?

1. A boy bought 2 yd. of string to add to his kite string and lost 2 ft. of it. What part of the 2 yd. did he lose?

2. A grocer had a bushel of potatoes and sold 2 qt. What part of a bushel had he left?

3. If  $\frac{1}{2}$  of a number is 80, what is  $\frac{1}{4}$  of the same number?

4. Forty-five square feet equals how many square yards and how many square feet?

5. If  $\frac{4}{5}$  of a class of 49 are boys, how many girls are there in the class?

---

Compare (in two ways) 1 qt. and 1 pt.; 1 pk. and 1 qt.; 1 pk. and 1 pt.; 1 pk. and 1 bu.; 1 qt. and 1 bu.; 1 pt. and 1 bu.

A quart is what part of 1 gal.? A gallon is how many times 1 qt.? In 1 gal. and 1 qt. how many pints are there? How many quarts are there in 1 gal. 6 qt.? In 2 gal. and 2 qt. how many quarts are there? In 1 bu. and 1 pk. how many pecks are there?

6. A grocer sold 1 bu. and 2 pk. of apples. How many quarts did he sell?

7. A gallon jug was three fourths full. How many quarts were in it? How many pints were in it?

8. Find the area of a floor 20 ft. by 18 ft.

9. If  $\frac{1}{2}$  of a yard of silk costs \$.50, how much will  $\frac{1}{4}$  of a yard cost?

10. A girl had 25 cents and she spent 10 cents. What part of her money did she spend, and what part of it did she have left?

### Written.

1. If a sawmill produces 2560 ft. of boards in a day, how many feet can it produce in 104 da.?

2. At the rate of 136 mi. a day, how many days would it take me to travel 5712 mi.?

3. If a woman can overcast 60 garments a day, which is the better plan, to work for \$4.75 a week of 6 days or for  $1\frac{1}{2}$  cents apiece? What is the difference in money?

4. A man paid \$6 $\frac{1}{2}$  for a pair of boots, \$17 $\frac{3}{4}$  for a coat, and \$5 $\frac{1}{2}$  for a vest. How much did he pay for all?

5. A father gave his 3 boys \$5, \$7½, and \$8¼ respectively, and had \$10½ left. How much money had he at first?

---

6. A grocer bought 1000 lb. of cheese for \$85.15 and retailed it at 12½ cents a pound. What was his profit?

7. In what time will a boy at 75 cents a day earn as much as a man earns in 90 da. at \$2.75 a day?

8. A clerk earns \$75 a month. He pays \$27½ for board, \$3.75 for washing, and \$15⅔ for other expenses. How much can he save in 7 mo.?

9. Mr. Winters sold a span of horses for \$483¼, losing \$124½. For how much should he have sold them to gain \$39⅞?

10. I have a garden, rectangular in shape, 240 ft. long by 63 ft. Draw the figure representing it, and tell how many square yards the garden contains.

## LXV

## Oral.

Rapidly add:

6	2	6	7	8	7	8	6	5	5	3	4	8	6	7	5	8	3	6	3
2	8	7	9	7	6	5	5	9	4	8	3	6	4	5	3	3	2	3	6
8	9	9	2	6	5	7	4	6	3	4	2	4	2	3	1	2	4	3	6
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1. How much will 5 yd. of wire cost at 2 cents an inch?
  2. I had \$10 and spent \$6½. How much had I left?
  3. How many pints are there in 1 gal. and 2 qt.?
  4. Three pints is what part of a gallon?
  5. Two thirds of a cord of wood at \$6 a cord will pay for what part of a ton of coal at \$8 a ton?
-

Rapidly add:

4	5	3	4	5	7	8	6	7	7	5	7	9	4	4	8	5	5	7	6
5	5	4	4	2	8	8	2	4	4	7	5	4	4	2	5	5	3	6	6
5	3	4	5	2	8	6	2	4	1	7	9	4	2	8	5	9	7	6	4

6. What is the value of 600 eggs at  $\$ \frac{1}{2}$  a dozen?
7. Reduce 2 bu. 2 pk. to pecks.
8. What part of a peck is 5 qt.?
9. Change  $\frac{17}{8}$  to a mixed number.
10. Reduce  $\frac{75}{100}$  to lowest terms:  $\frac{50}{100}$ ;  $\frac{25}{100}$ ;  $\frac{10}{100}$ ;  $\frac{5}{100}$ .

Written.

Reduce 16 bu. 3 pk. to quarts.

$$16 \times 32 \text{ qt.} = 512 \text{ qt.}$$

$$3 \times 8 \text{ qt.} = 24 \text{ qt.}$$

---


$$536 \text{ qt.}$$

1. Reduce 24 bu. 3 pk. to quarts.
2. Reduce 5 lb. 9 oz. (Avoir.) to ounces.
3. What will the amount stated in example 2 cost at \$.15 an ounce?
4. Find the cost of painting 6 blackboards, each 21 ft. long by 3 ft. wide, at \$.45 a square yard.
5. A drover bought 247 sheep at \$4.75 a head, and 42 more at \$4.40 a head. Eight of them died, and he sold the rest at \$6 apiece. How much did he gain?
6. Reduce 26 rd. 3 yd. to yards.
7. How many inches are there in 3 yd. and 2 ft.?

8. In 2880 pt. how many bushels are there?
9. Add \$347.69, \$209.75, \$409.37, \$689.98, \$147.09.
10. If 17 T. of coal cost \$102, how much will 20 T. cost? (Indicate the operation by signs, before solving.)

## LXVI

## Oral.

## Rapidly answer:

How many cents are there in 7 dimes? in 14 dimes?  
in 53 dimes? in 48 dimes? in 56 dimes?

How many dimes and what remainder are there in  
56 cents? in 72 cents? in 48 cents? in 27 cents? in  
96 cents?

How many dollars are there in 50 dimes? in 70 dimes?  
in 190 dimes? in 790 dimes?

How many dollars and dimes are there in 485 dimes?  
in 68 dimes? in 370 dimes? in 72 dimes? in 857 dimes?

How many dimes are there in 45 dollars? in 1 dollar?  
in 85 dollars? in 56 dollars? in 7 dollars? in 3 dollars?  
in 8 dollars? in 25 dollars?

Find the sum of \$2 and 8 dimes; \$5 and 4 dimes; \$6  
and 7 cents; 8 dimes and 9 cents; 5 dimes and 4 cents;  
and 6 dimes and 8 cents.

1. If  $\frac{1}{2}$  of a number is 60, what is  $\frac{1}{4}$  of the same  
number?

2. Eighty-five square feet equal how many square  
yards and how many square feet?

3. If  $\frac{4}{5}$  of a class of 42 are boys, how many girls are  
there in the class?



4. If  $\frac{1}{2}$  of a yard of silk costs \$1.50, how much will  $\frac{1}{4}$  of a yard cost?

5. What number multiplied by 3 equals 210?

Rapidly answer:

Find the number of dimes in \$4 and 6 dimes; in \$8 and 10 dimes; in \$5 and 6 dimes.

Find the number of dollars and dimes in 712 dimes; in 507 dimes; in 315 dimes; in 425 dimes.

Three dollars equals how many cents? \$9 equals how many cents? \$40 equals how many cents? \$72 equals how many cents? \$816 equals how many cents?

Four hundred cents equals how many dollars? 800 cents equals how many dollars? 1200 cents equals how many dollars? 900 cents equals how many dollars?

Six dollars and 86 cents equals how many cents? \$12 and 34 cents equals how many cents? \$8 and 54 cents equals how many cents?

Four hundred and fifty-six cents equals how many dollars and cents? 572 cents equals how many dollars and cents? 894 cents equals how many dollars and cents? 298 cents equals how many dollars and cents?

How many cents are there in \$5 and 8 dimes? \$6 and 4 dimes? \$8 and 6 dimes? \$45 and 3 dimes? \$18 and 15 dimes?

How many dollars and dimes are there in 498 cents? 563 cents? 456 cents? 328 cents? 98 cents? 768 cents?

6. A grocer put up  $1\frac{1}{2}$  lb. of tea in  $\frac{1}{4}$ -lb. packages. How many packages were there?

7. At \$8 a ton, how much will 3000 lb. cost?

8. How much shall I have to pay for 5000 lb. of coal at \$6 a ton?

9. If 2 oz. of tea cost 5 cents, how much will a pound cost?

10. If a dinner was served to 22 people at the rate of \$1.50 for each person, how much did the dinner cost?

### Written.

1. How much will it cost to cement a cellar bottom 36 ft. long by 21 ft. at \$.20 a square yard?

2. How much added to  $9\frac{2}{3}$  will make  $14\frac{1}{3}$ ?

3. A grocer sold a barrel of potatoes for \$3 $\frac{1}{5}$ , gaining \$1 $\frac{1}{4}$ . How much did it cost?

4. Mrs. Charles G. Burt bought of you to-day 9 lb. of roast beef at 22 cents; 7 lb. of lamb at 18 cents; 8 lb. of steak at 25 cents. Write out in proper form for a bill and receipt the bill.

5. Eight bushels and 3 pk. equals how many pecks?

6. A speculator purchased a farm containing 275 A. for \$16,500, and sold it at \$57.20 per acre. How much did he lose?

7. Reduce 88 sq. rd. and 15 sq. yd. to square yards.

8. James Clinton has three wheat fields. The first contains  $84\frac{5}{8}$  A., the second  $70\frac{3}{8}$  A., and the third  $109\frac{1}{4}$  A. How many acres has he in all?

9. How many rods are there in  $28\frac{3}{4}$  rd., 20.7 rd., 8.07 rd., and  $3\frac{1}{8}$  rd.?

10. Charles Brown bought of Walker & Bros., Grocers, 6 bars of soap at 5 cents a bar; 2 gal. of sirup at \$1.35 a gallon; 7 lb. of sugar at  $3\frac{1}{2}$  lb. for 19 cents; 3 qt. of vinegar at 8 cents a quart. Make out a bill and receipt it.

## LXVII

Oral.

Rapidly add :

4	4	4	3	3	3	6	4	8	8	7	6	4	4	9	8	6	6	4	3
4	4	5	3	3	6	4	8	8	7	6	4	4	9	8	6	6	4	3	3
4	5	3	3	6	4	8	8	7	6	4	4	9	8	6	6	4	3	3	2
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

1. How much money have I, if \$25 is  $\frac{1}{5}$  of my money?
2. What part of 10 cents is 7 cents?
3. A boy found a quarter and earned 20 cents. How many pineapples can he buy at 15 cents each?
4. If you go to bed at 10 o'clock and get up at 7, how many hours do you sleep?
5. If I burn  $\frac{1}{2}$  of a ton of coal in a week, how much shall I burn at that rate in a month of 30 da.?

Rapidly add :

3	6	4	5	7	4	4	8	4	3	9	4	1	4	1	3	8	2	1	3
2	4	5	1	4	4	1	4	3	1	4	1	4	8	3	4	3	4	2	1
6	5	1	7	4	1	8	3	1	9	1	5	2	6	4	3	1	3	4	6
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

6.  $\$9\frac{1}{4} - \$7\frac{1}{2} = ?$
7. How many square feet are there in 11 sq. yd.?
8. How much will  $1\frac{3}{4}$  lb. of butter cost at 28 cents a pound?
9. If three boxes cost 15 cents, how much will 12 boxes cost? At the same price, how many can I buy for 60 cents?
10. How many square inches are there in a box cover 15 in. by 12 in.?

**Written.**

1. A farmer had three fields of grain; one field produced  $947\frac{3}{4}$  bu., another  $800\frac{1}{2}$  bu., and the other  $1406\frac{2}{3}$  bu. How many bushels of wheat did he get from his three fields?

2. A man having a farm of  $960\frac{1}{5}$  A. sold at one time  $136\frac{1}{2}$  A. and at another time  $438\frac{1}{4}$  A. How many acres remained?

3. A farm was bought for \$6070 and sold at a loss of \$1900 $\frac{3}{4}$ . What was the selling price?

4. James Brown, dry-goods dealer, sells Thomas Waterman, June 28, 1897,  $8\frac{1}{2}$  yd. sheeting at 25 cents; 6 doz. buttons at 18 cents a dozen; 18 yd. of satin at  $87\frac{1}{2}$  cents; 3 blankets for \$8. Make out the bill and receipt it.

5. Add: \$74.83

683.15

42.78

5.69

6.84

1965.38

4872.49

837.65

74.09

8.78

6. Add:  $\frac{1}{2}$     $\frac{1}{4}$     $\frac{2}{3}$     $\frac{3}{4}$   
 $\frac{2}{3}$     $\frac{3}{5}$     $\frac{5}{6}$     $\frac{2}{7}$   
 $\frac{3}{5}$     $\frac{3}{5}$     $\frac{4}{9}$     $\frac{5}{14}$

7. Ned bought a knife for 87 cents and a fountain pen for \$1.37. He sold both for \$3. How much did he gain?

8. Harry has \$56 $\frac{1}{4}$ ; Clara has \$29 $\frac{3}{4}$  more than Harry. How much money have both together?

9. How many feet of barbed wire will be required to go once around a field that is  $194\frac{7}{12}$  ft. long and  $84\frac{1}{8}$  ft. wide?

10. A man bought some wheat for \$34 $\frac{1}{2}$  and some corn for \$23 $\frac{3}{4}$ . If he paid \$42 $\frac{1}{2}$  down, how much remains to be paid?

## LXVIII

## Oral.

Rapidly give the answers :

42 - 23; 67 - 22; 81 - 65; 44 - 35; 52 - 34;  
38 + 42; 46 + 34; 21 + 49; 67 - 23; 45 - 35;  
21 - 16; 38 + 18; 49 + 16; 37 - 19; 24 + 18;  
27 + 28; 46 + 29; 37 + 34; 45 - 28; 37 + 48.

1. I bought  $9\frac{1}{2}$  lb. cheese at 12 cents a pound, and gave a two-dollar bill. How much change did I receive?

2. How much will  $6\frac{3}{4}$  yd. of cloth cost at 30 cents a yard?

3. How many yards are there around the walls of a room 12 ft. square? How many square yards are there in the floor?

4. How many rods of fence will be required to inclose a lot of land  $6\frac{1}{2}$  rd. long and  $4\frac{1}{2}$  rd. wide?

5. A piece of carpet 12 yd. long and  $2\frac{1}{2}$  ft. wide contains how many square feet? How many square yards does it contain?

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Rapidly give the answers :

39 + 46; 48 + 39; 52 + 29; 68 + 32; 48 + 39;  
73 - 43; 84 - 22; 65 + 64; 77 - 42; 41 + 38;  
84 - 26; 76 + 44; 65 + 45; 98 + 42; 73 + 67;  
58 + 43; 69 + 42; 87 - 46; 79 + 99; 87 + 68.

6. The steps of an ostrich measure 5 ft. How many yards does it travel in taking 120 steps?

7. I bought a ream of paper for three dollars and sold it at  $\frac{1}{2}$  cent a sheet. How much did I gain or lose?

8.  $\frac{3}{8}$  of 40 is how many times three?

9. 4 bu. is how many times 4 pk. ?
10. 4 bu. is how many times 16 qt. ?

**Written.**

1. Reduce 25 bu. 3 pk. 7 qt. to quarts.
2. What part of 1 bu. is 25 qt. ?
3. 6 pt. is what part of 6 gal. ?
4. Boston, June 10, 1909, James H. Rice & Son bought of Robert Bros., Washington Street, Boston, 12 doz. eggs at 26 cents, 17 lb. of butter at 32 cents; June 17, 34 lb. cheese at 8 cents, 16 bu. potatoes at 85 cents. Make out the bill and receipt it.
5. How many rods of fence will inclose a farm  $\frac{1}{2}$  of a mile square ?

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6. A man returning from Alaska has 36 lb. of pure gold. What is its value, at \$248.07 a pound ?

7. If I buy 2 bu. of chestnuts at \$4 $\frac{3}{4}$  a bushel and retail them at 12 $\frac{1}{2}$  cents a pint, what is the whole gain ?

8. How much will 3 miles of telegraph wire cost at 12 cents a foot ?

9. How much will 2 bu. 1 pk. of grass seed cost at 14 cents a quart ?

10. How many cocoanuts at 25 cents each can be bought for \$150.75 ?

**LXIX****Oral.**

Rapidly answer :

Tell how many dimes there are in : \$ $\frac{1}{10}$  ; \$ $\frac{2}{10}$  ; \$ $\frac{3}{10}$  ;  
\$ $\frac{4}{10}$  ; \$ $\frac{10}{10}$  ; \$1 $\frac{1}{10}$  ; \$1 $\frac{2}{10}$  ; \$1 $\frac{5}{10}$ .

Tell the number of dollars and the fraction of a dollar there are in: \$3 and 30 cents; \$7 and 80 cents; \$11 and 40 cents; \$18 and 90 cents; \$50 and 50 cents.

Taking as a type \$9 and 90 cents =  $9\frac{90}{100}$  = \$9.90, express similarly: \$14 and 40 cents; \$6 and 70 cents; \$12 and 20 cents; \$56 and 30 cents; \$87 and 50 cents.

Read: 3.7; 4.6; 9.2; 6.1; 7.4; 15.3; 25.6; 17.2.

Tell how to write in decimal form: \$4 and 4 dimes; \$8 and 6 dimes; 4 units and 4 tenths; 8 units and 6 tenths; 7 units and 5 tenths; 6 units and 3 tenths.

Read: 6.7; 9.8; 134.3; 245.6; 4.5; 87.2; 56.8.

1. How many months are there in  $8\frac{3}{4}$  years?
2. How many thirty-ninths are the same as  $\frac{10}{3}$ ?
3. What is the cost of 2 doz. oranges, if 6 cost 15 cents?
4. If 1 ounce of tea costs 5 cents, how much will 1 pound cost?
5. At  $8\frac{1}{2}$  cents a pint, what is the cost of 2 quarts?

Rapidly multiply each of the following numbers by 5; by 6; by 7; by 8; by 9:

20; 40; 30; 60; 80; 70; 50; 90; 18; 15; 26; 48; 37; 57; 96; 96; 38; 59; 84.

6. At 48 cents a pound, how many ounces of tea can be bought for 12 cents?

7. Reduce  $\frac{27}{4}$  to a mixed number.

8. If  $8\frac{3}{4}$  yd. of ribbon are cut into  $\frac{1}{4}$ -yd. pieces, how many pieces will there be?

9. Reduce  $\frac{22}{8}$  to lowest terms.

10. From 7 times 8 take 3 times 12.

**Written.**

1. If 9 lots cost \$486.75, how much will 54 lots cost?
  2. How many tons of hay at \$18 a ton must be given for 45 cords of wood at \$4 a cord?
  3. If  $\frac{1}{5}$  of a farm costs \$4000, what is the cost of the whole farm?
  4. If  $\frac{3}{8}$  of an acre costs \$345, how much will the acre cost?
  5. Add 458.3, 674.2, 456.7, 8385.6, 987.4, 8352.9, 26.5, 369.7.
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6. Find the cost of 35 yd. of cloth, if 28 yd. cost \$100.60.
  7. A farm cost \$8000. Find the cost of  $\frac{3}{4}$  of it.
  8. If  $\frac{2}{3}$  of a farm costs \$2000, how much will  $\frac{1}{6}$  of it cost?
  9. A piece of linen measured  $59\frac{1}{8}$  yd. After being washed it measured only  $58\frac{3}{4}$  yd. How many inches had it shrunk?
  10. I paid \$29 $\frac{3}{4}$  for coal, \$6 $\frac{1}{4}$  for flour, \$1 $\frac{1}{2}$  for butter, \$3 $\frac{1}{4}$  for sugar. How much change is due from \$50?

**LXX****Oral.**

Rapidly multiply each of the following numbers by 20; by 40; by 80; by 70; by 30:

20; 40; 30; 60; 80; 70; 50; 90; 10.

Beginning with 3, count by 7's to 101.

1. How much will 18 yd. of cloth cost at  $33\frac{1}{2}$  cents a yard?



2. At  $12\frac{1}{2}$  cents a pound, how much will 8 lb. of beef cost?

3. Give the cost of 4 yd. of cloth at  $37\frac{1}{2}$  cents a yard.

4. Change  $1\frac{3}{4}$  to a mixed number.

5. What part of a yard is a piece of cloth 27 in. long?

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Rapidly multiply each of the following numbers by 20;  
by 40; by 80; by 30; by 70:

22; 45; 33; 63; 85; 75; 56; 92; 98; 15; 27.

Beginning with 6, count by 5's to 101.

6. How much will 8 bu. of wheat cost at  $87\frac{1}{2}$  cents a bushel?

7. I bought  $8\frac{3}{4}$  lb. of beef at 16 cents a pound, and gave a dollar bill. How much in change should I receive?

8. Find the price of 12 bu. of corn at  $66\frac{2}{3}$  cents a bushel.

9. I bought a book for 18 cents and sold it to gain 15 cents. How many pens at 3 cents can I buy with the money I received?

10. How many inches of fringe will it take for a towel that measures 12 in. by 20 in.?

#### Written.

1. A stock farmer paid \$500 for a team, \$325 for a flock of sheep, and \$62.50 apiece for 15 cows. How much did his stock cost him?

2. A merchant bought a piece of broadcloth containing 56 yd. for \$140 and sold it at \$3 a yard. How much did he make?

3. A man receives a salary of \$25 a week. He pays \$8.75 for board and \$4.65 a week for all other expenses. How much does he save in 52 weeks?

4. A boy gathers 48 eggs each day and sells 21 each evening. In how many days will he have 18 doz. left?

5. How much will  $21\frac{1}{2}$  lb. of butter cost at 40 cents a pound?

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6. A farmer having 6 bu. of strawberries desires to put them in  $\frac{3}{4}$ -qt. boxes. How many boxes will be required to hold them?

7. A stationer bought a gross of pens for 72 cents and sold them at a cent each. How much did he gain on 118?

8. If peanuts are sold for 10 cents a pint, how much is made on the sale of  $1\frac{1}{2}$  bu. that cost \$4.80 per bushel?

9. How much will 18 gal. 3 qt. of vinegar cost at 20 cents a gallon?

10. How much will  $2\frac{7}{8}$  pk. of plums cost at 5 cents a quart?

### LXXI

#### Oral.

Name all the odd numbers from 1 to 39.

Name all the even numbers from 2 to 40.

Separate into two factors: 6; 8; 12; 15; 20; 32; 48; 30; 45; 60; 90; 24; 27; 36; 49.

Name a number that has no factors except itself and one. What is such a number called?

Name all the prime numbers from 1 to 47.

1. Find the cost of 3 yd. of velvet at \$2.50 and 20 yd. of ribbon at \$ $\frac{1}{4}$ .

2. How far will a man walk in 6 da. of 8 hr. each at the rate of  $2\frac{1}{2}$  mi. an hour?

3. When peaches are \$ $\frac{4}{5}$  a bushel, how many bushels can I buy for \$10?

4. Two and one half pounds of tea will cost how many times as much as 4 oz.?

5. How many cups holding  $\frac{1}{2}$  gill could I fill from a coffee pot containing  $1\frac{1}{2}$  gal.?

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Name all the prime numbers from 7 to 56.

Separate into two factors: 10; 18; 26; 35; 42; 56; 72; 63; 80; 14; 28; 40.

What is a composite number? Name five composite numbers. Name five numbers that can be divided by 3. Name five numbers that can be divided by 5.

Name three numbers that are divisible by 2; by 4; by 6; by 9.

Name the prime factors of: 8; 12; 24; 30.

6. A boy bought apples at the rate of 3 for 2 cents and sold them at the rate of 2 for 3 cents. How much profit did he make on 30 apples?

7. What is the average weight of 6 chickens which weigh all together  $10\frac{1}{2}$  lb.?

8. A sidewalk 3 rd. long and 6 ft. wide measures how many square feet? How many square rods does it measure?

9. A piece of carpet contains 18 sq. yd. It is  $\frac{3}{8}$  of a yard wide. How long is it?

10. How many feet are there in 4 rods?

**Written.**

1. Add: \$209.34  
2169.78  
359.27  
28.63  
436.58  
937.41  
86.93  
847.28  
45.37  
634.38  
29.74  
974.93  
48.35
2. How much will 467 bbl. of flour cost at \$5.75 a barrel?
3. A contractor received \$48,000 for building a schoolhouse. He paid  $\frac{2}{3}$  of what he received for labor,  $\frac{1}{4}$  of it for stock, and the rest was profit. How much was profit?
4. A man sold at different times  $28\frac{1}{4}$  bu.,  $16\frac{1}{2}$  bu.,  $46\frac{3}{4}$  bu.,  $17\frac{7}{8}$  bu., and 18 bu. of potatoes. How much in all did he sell, and for how much, at 60 cents a bushel?
5. Add 4604 and 8 hundredths, 2046 and 50 thousandths, 37 and 9 tenths, 565 and 75 hundredths, 408 thousandths, 6706 and 28 thousandths. \_\_\_\_\_
6. From 418.987 take 307.38.
7. Multiply 4000 by .4; by .06; by .008.
8. Divide 23.04 by 3; by 30; by 6; by 60.
9. In a town of 4200 inhabitants .9 are white, .07 are negroes, and the remainder are Chinese. How many of each are there?
10. How much will 24 bu. 1 pk. of corn cost at 84 cents a bushel?

**LXXII****Oral.**

From 100 take 20; 60; 35; 45; 75; 55; 15; 65; 25; 40.  
From 100 take 8; 18; 38; 48; 28; 58; 68; 88; 78; 98.

From 100 take 3; 13; 23; 43; 63; 53; 33; 73; 83.

Beginning with 3, count by 7's to 101.

Beginning with 6, count by 7's to 97.

1. At 8 oz. to the cup, how many pounds and ounces do 5 cups of sugar weigh?

2. John bought 2 doz. firecrackers. When lighted all but 3 exploded. What part of them exploded?

3. If  $\frac{1}{2}$  of my journey was 80 mi., how many miles was  $\frac{1}{4}$  of it?

4.  $1\frac{1}{2}$  lb. of candy was divided equally among 6 boys. How many ounces did each receive?

5. I received \$32 and spent  $\frac{3}{8}$  of it. How much had I left?

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From 100 take 17; 16; 15; 13; 18; 19; 12; 11; 14.

From 100 take 27; 21; 23; 25; 28; 24; 26; 22; 29.

From 100 take 34; 43; 56; 35; 48; 57; 58; 61; 72.

Beginning with 4, count by 6's to 100.

Beginning with 7, count by 6's to 103.

6. At \$3 per doz. for handkerchiefs, what part of a dozen can be bought for \$ $\frac{3}{4}$ ?

7. How much will 72 in. of wire cost at 10 cents a foot?

8. At the rate of 4 for 7 cents, how much will 48 pencils cost?

9. John is 15 years old and  $\frac{3}{4}$  of his age is  $\frac{1}{4}$  of his father's age. How old is his father?

10. If  $\frac{3}{4}$  of an acre costs \$40, what is the cost of a whole acre?

**Written.**

1. Find the sum of  $\frac{3}{8}$ ,  $\frac{1}{3}$ ,  $\frac{5}{18}$ ,  $\frac{2}{3}$ .
  2. Mr. Jones walked  $23\frac{1}{4}$  mi. on Monday,  $22\frac{1}{2}$  mi. on Tuesday,  $24\frac{5}{12}$  mi. on Wednesday, and 75 mi. during the next 3 days. How far did he walk in the 6 days?
  3. From the sum of  $14\frac{1}{2}$  and  $29\frac{1}{8}$  take the difference between  $25\frac{3}{4}$  and  $60\frac{1}{8}$ .
  4. How much will  $80\frac{1}{4}$  yd. of cloth cost at \$4 a yard?
  5. How much will  $\frac{9}{40}$  of an acre of land cost at \$120 an acre?
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6. Find the sum of  $\frac{7}{12}$ ,  $\frac{5}{8}$ ,  $\frac{3}{4}$ ,  $\frac{1}{24}$ .
  7. Cyrus bought  $75\frac{7}{8}$  bu. of corn,  $41\frac{1}{4}$  bu. of oats,  $20\frac{1}{2}$  bu. of rye, and 10 bu. of barley. How many bushels of grain did he buy?
  8. Subtract  $27\frac{7}{16}$  from the sum of  $75\frac{3}{4}$  and  $28\frac{7}{8}$ .
  9. How much will  $18\frac{3}{4}$  bbl. of crude oil cost at \$7 a barrel?
  10. Find the cost of 35 horses at \$205 $\frac{3}{4}$  each.

**LXXIII****Oral.**

Rapidly add:

6	4	3	7	4	2	8	1	9	4	2	8	4	4	7	4	6	4	5	5
4	3	1	4	2	1	4	9	4	2	1	4	4	1	4	1	4	5	1	4
3	1	7	2	1	8	7	4	2	7	6	4	1	7	4	6	5	1	5	8
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

1. If 2 lb. of sugar cost 12 cents, what will be the cost of  $\frac{1}{3}$  of a pound?  $\frac{2}{3}$  of a pound?
2. I bought a desk for \$60 and sold it at a loss of \$15. What was the selling price?

3. From 7 times 8 take 3 times 12.
4. How many feet are there in a mile and five feet?
5. If a yard costs 54 cents, how much will 20 in. cost?

Rapidly add:

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3	1	3	4	4	7	3	1	5	8	3	2	4	9	3	2	3	1	5	6
1	3	4	5	1	3	1	5	3	8	2	4	9	3	3	3	8	5	6	2
3	4	5	1	9	1	5	8	3	2	4	9	3	3	2	1	5	6	2	2
<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>

6. If a yard costs 30 cents, what is the cost of 2 ft.?
7. At the rate of 4 for 5 cents, how much will 32 apples cost?
8. Change  $2\frac{2}{3}$  to a mixed number.
9. How many fourths are there in  $5\frac{3}{4}$ ?
10. Five eighths of 48 is 3 times what number?

Written.

1. Write and read: .7; .18; .169; .07; .70; .017; .208; .009; 1.09; 6.004; 80.070.
2. Write decimally:  $\frac{8}{10}$ ;  $\frac{64}{100}$ ;  $\frac{848}{1000}$ ;  $\frac{7}{100}$ ;  $\frac{7}{1000}$ ;  $\frac{71}{100}$ ;  $\frac{70}{1000}$ ;  $\frac{83}{1000}$ ;  $\frac{104}{1000}$ ;  $\frac{100}{10}$ ;  $\frac{100}{1}$ .
3. Add the following decimals: .648; .309; .008; .700; .830.
4.  $72.015 + 9.6, - 40.016, + 53.209 = ?$
5. How many yards are there in 46 pieces of cotton cloth, each piece containing 47.8 yd.?
6. Copy and read: .5; .05; .005; .025; .875; .345; 3.45; 34.5; .817; 8.17; 81.7; .016.
7. Write decimally:  $\frac{8}{100}$ ;  $\frac{8}{100}$ ;  $\frac{804}{1000}$ ;  $\frac{8}{1000}$ ;  $\frac{488}{100}$ ;  $\frac{1}{10}$  of 1;  $\frac{1}{10}$  of .1;  $\frac{1}{10}$  of .01.

8. Express in the form of common fractions: .06; .5; .25; .025; .875; .125; .625;  $.33\frac{1}{3}$ ; .75;  $.66\frac{2}{3}$ .

9. Write and add 7 hundredths, 85 thousandths, 6 and 9 tenths, 34 thousandths, 148 thousandths, 87 and 6 hundredths.

10.  $100 - .909, + 4.031, - .236, + 9.005 = ?$

### LXXIV

#### Oral.

Rapidly give the answers:

21 - 14; 61 - 14; 21 - 13; 91 - 13; 51 - 13; 23 - 16;  
83 - 16; 43 - 16; 23 - 18; 63 - 18; 22 - 18; 72 - 18;  
22 - 15; 72 - 15; 92 - 15; 22 - 19; 62 - 19; 82 - 19;  
24 - 19; 84 - 19; 88 - 19; 77 - 18; 54 - 16; 92 - 15.

1. What part of a bushel is a peck? What part of a bushel is 2 pk. and 4 qt.?

2. What part of 3 pk. is 6 qt. 1 pt.?

3. What is the price of a day's board at \$10.50 for a week?

4. How many men at \$4 a day each can you hire, if you have \$38?

5. How much will 1 doz. oranges cost at 2 for 5 cents?

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Rapidly give the answers:

25 - 17; 55 - 17; 75 - 17; 22 - 17; 92 - 17; 35 - 28;  
65 - 28; 95 - 38; 75 - 48; 85 - 58; 37 - 29; 67 - 29;  
87 - 39; 97 - 59; 97 - 49; 42 - 36; 52 - 26; 82 - 46;  
92 - 56; 92 - 36; 78 - 56; 94 - 47; 82 - 65; 75 - 39.

6. At \$6 per cord, how much will  $17\frac{1}{2}$  cd. of wood cost?



7. At the rate of 20 lb. for \$1, how much will 10 lb. of sugar cost? How much will 5 lb. cost? How much will 15 lb. cost?

8. When 9 bu. of apples cost \$10.25, how much will 54 bu. cost?

9. Compare  $\frac{1}{2}$  and  $\frac{1}{4}$ ;  $\frac{1}{2}$  and  $\frac{3}{4}$ ;  $\frac{1}{2}$  and  $\frac{1}{3}$ .

10. I have a square flower bed containing 64 sq. ft. How many feet around does it measure?

**Written.**

1. Multiply 74,609 by 3.42.

Multiply 9.73 by 250.1.

2. Divide each of the following numbers by 3: .6; .06; .006; .012; 1.2; 10.2; .12; 10.02.

3. A milkman carries to Boston 4976 qt. of milk. How much should he receive for it at  $7\frac{1}{2}$  cents a quart?

4. Mr. Rice pays \$32.25 a month for rent. At this rate, how much will the rent amount to for  $2\frac{3}{4}$  years?

5. An express train travels at the rate of 47.09 mi. an hour. How far will it travel in 24.5 hr.?

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6. Multiply 9.047 by 246; 20,017 by 4.62.

7. Divide each of the following numbers by 4: .12; 1.2; .012; 1.20; .024; .24; 2.4; .48; .048.

8. In a factory of 320 hands the average day's pay is \$1.065. How much would the pay roll for 1 week amount to?

9. At the rate of 45 mi. an hour, how many hours will it take a man to travel 371.70 mi.?

10. In 2 mi. 6 rd. how many yards are there?

## LXXV

## Oral.

Rapidly divide by 3: .39; .48; .42; .60; .45; 63; 72; 81; 75; .57; .84.

Rapidly divide by 4: .52; .60; .72; 56; 64; .76; 68; .84; 92; 88; .96.

Beginning with 4, count by 9's to 103.

Beginning with 6, count by 9's to 96.

1. How many square inches are there in a surface 12 in. by 15 in.?

2. If a foot of chain costs 16 cents, what is the cost of 9 in.?

3. How many square yards are there in a rug 9 ft. by 12 ft.?

4. How many rods around does a field measure which is 20 rd. square?

5. How many yards of fringe will it take for a towel 3 ft. long and 2 ft. wide?

---

Rapidly divide by 5: .70; 65; 85; 95; .80; .75; 100; 125; 140; 115.

Rapidly divide by 6: 72; .84; .96; .90; 78; 108; 120; 102; 126; 144.

Beginning with 3, count by 8's to 99.

Beginning with 4, count by 8's to 100.

6. A rectangular field containing 1 A. is 40 rd. long. How many rods around does the field measure?

7. How many rods of fence will inclose a farm  $\frac{1}{4}$  of a mile square?

8. How many rods of fence will inclose a farm  $\frac{1}{2}$  of a mile square?
9. At 10 cents a square yard, how much will it cost to paint a ceiling 20 ft. long and 18 ft. wide?
10. A lot 16 rd. long contains  $\frac{1}{2}$  of an acre. How wide is it?

**Written.**

1. With a ruler draw accurately to scale a diagram of a plot of ground 200 ft. long and 100 ft. wide. Cut it up into lots of 25 ft. by 100 ft. (Scale  $\frac{1}{4}$  in. equals 10 ft.)
2. If an entire plot cost \$8000, what is the value of two lots?
3. With a ruler draw accurately to scale a diagram of a plot of ground 300 ft. long and 125 ft. wide. Cut it up into lots of 25 ft. by 100 ft. (Scale  $\frac{1}{8}$  in. equals 5 ft.) If the entire plot is worth \$15,000, what is the value of 4 lots?
4. How much will it cost to fence two of the lots described in example 3 at 10 cents a foot?
5. What will be the cost of flagging a sidewalk 312 ft. long and  $6\frac{1}{2}$  ft. wide at \$2.70 a square yard?
6. Draw a rectangle and divide it into 8 equal parts; then write in the form of fractions answers to the following questions:
  - $\frac{1}{4}$  equals how many 8ths?
  - $\frac{1}{2}$  equals how many 4ths?
  - $\frac{1}{2}$  equals how many 8ths?
  - $\frac{1}{4}$  is what part of  $\frac{1}{2}$ ?
7. A rectangular field is 120 rd. long and contains 24 A. What is its width in rods?

8. How many acres are there in a piece of land 60 rd. square?

9. How much is the land described in example 8 worth at \$75 an acre?

10. How much will it cost to cement a cellar bottom 48 ft. long and 27 ft. wide at 45 cents a square yard?

## LXXVI

## Oral.

Rapidly give the quotients:

$\frac{35}{7}$ ;  $\frac{36}{8}$ ;  $\frac{40}{7}$ ;  $\frac{42}{6}$ ;  $\frac{48}{8}$ ;  $\frac{50}{5}$ ;  $\frac{28}{7}$ ;  $\frac{28}{4}$ ;  $\frac{8}{8}$ ;  $\frac{63}{7}$ ;  $\frac{54}{6}$ ;  $\frac{28}{4}$ ;  $\frac{40}{5}$ ;  
 $\frac{56}{7}$ ;  $\frac{81}{9}$ ;  $\frac{120}{4}$ ;  $\frac{108}{12}$ ;  $\frac{84}{7}$ ;  $\frac{45}{5}$ ;  $\frac{27}{3}$ .

1. How many square feet are there in a walk 72 ft. long and 4 ft. wide?

2. How many square inches are there in the entire surface of a 4-in. cube? (Make a cardboard box to illustrate this.)

3. How many square feet are there in the floor of your schoolroom?

4. How many square inches are there in the top of your desk? How many square feet are there in the surface of the blackboard?

5. If a table is 3 yd. long and 2 yd. wide, how many square feet are there in the top of it?

Rapidly give the quotients:

$\frac{36}{4}$ ;  $\frac{24}{8}$ ;  $\frac{48}{12}$ ;  $\frac{48}{8}$ ;  $\frac{72}{8}$ ;  $\frac{72}{4}$ ;  $\frac{24}{8}$ ;  $\frac{56}{8}$ ;  $\frac{81}{8}$ ;  $\frac{40}{8}$ ;  $\frac{121}{11}$ ;  $\frac{120}{5}$ ;  
 $\frac{124}{4}$ ;  $\frac{27}{9}$ ;  $\frac{80}{5}$ ;  $\frac{32}{8}$ ;  $\frac{63}{9}$ ;  $\frac{64}{8}$ ;  $\frac{52}{4}$ ;  $\frac{102}{6}$ .

6. If it takes 24 yd. of carpet a yard wide to cover a floor, how many yards  $\frac{3}{4}$  yd. wide will be needed for the same floor?

7. How many square inches are there in  $\frac{1}{4}$  of a square foot?
8. What fraction of a square yard is 2 sq. ft.?
9. What is the difference in square inches between a 6-inch square and 6 sq. in.?
10. How much will it cost to put a strip of molding around the walls of a room 21 ft. long and 18 ft. wide at 5 cents a yard?

**Written.**

1. A lot 25 ft. by 100 ft. has on it a house 25 ft. by 55 ft. How many square feet are left for a yard?
  2. How many square feet are there in the floor of a room 24 ft. long and 18 ft. wide?
  3. What will be the cost of painting the ceiling of a room 24 ft. long by 18 ft. wide at  $12\frac{1}{2}$  cents a square yard?
  4. A field is 40 rd. long and  $27\frac{1}{2}$  yd. wide. What is the distance in rods around it?
  5. How much will it cost to carpet a room 18 ft. long and 15 ft. wide at 75 cents per square yard?
- 
6. How much will it cost to fence a lot 24 rd. long by 20 rd. wide at \$1.12 per rod?
  7. I have a plot of land 200 rd. long and 75 rd. wide, for which I paid \$10,000. Into how many city lots 25 ft. by 100 ft. can I divide it? How much shall I gain on all by selling each lot for \$2500?
  8. How many yards of fence will be required to inclose a rectangular field  $98\frac{1}{2}$  yd. long and  $50\frac{1}{2}$  yd. wide?

9. My field is 100 rd. long and 75 rd. wide. How much is it worth at \$2 a square rod? How much will it cost to fence it at \$.15 a rod?

10. A house 45 ft. by 65 ft., with an addition 25 ft. square, is built upon a plot 100 ft. square. How many square feet of ground are covered by the building? How many square feet remain for a garden? What part of the whole field is used for the garden? (Illustrate by means of a diagram.)

### LXXVII

#### Oral.

Rapidly find  $\frac{1}{2}$  of each of the following numbers:

18; 26; 30; 8; 15; 6; 9; 32; 24; 48; 56; 28; 120; 16; 30.

Find  $\frac{1}{3}$  of each of the following:

21; 6; 27; 36; 41; 48; 42; 9; 12; 15; 45; 60; 20; 17; 28.

Beginning with 4, count by 8's to 100; by 6's to 100.

Beginning with 6, count by 8's to 102.

1. What is the contents in cubic inches of a cube  $6 \times 4 \times 2$  in.?

2. How many cubic feet are there in a block of ice  $4 \times 3 \times 2$  ft.?

3. How many cubic feet are there in a rectangular solid 4 ft. square and 30 in. deep? (Make a drawing of such a solid.)

4. If you had 24 1-inch cubes, how could you pile them to make a solid with 6 rectangular faces? (Illustrate by a drawing.)

5. How many cubic inches of water would a tin box 5 in. by  $3\frac{1}{2}$  in. by 4 in. hold?

---

Rapidly find  $\frac{1}{4}$  of each of the following numbers:

20; 24; 16; 8; 10; 12; 15; 28; 30; 27; 29; 32; 35; 48; 42.

Find  $\frac{1}{5}$  of each of the following numbers:

20; 15; 10; 25; 24; 32; 36; 35; 30; 40; 42; 48; 45; 70; 72.

6. How many one-foot cubes could be placed in a cubical box 1 yd. long, 1 yd. wide, and 1 yd. high?

7. How can you arrange 24 one-inch cubes to make a pile 3 in. high? (Make such a pile of one-inch cubes.)

8. How many one-inch cubes can be placed on the bottom of a box 4 in. long and 3 in. wide?

9. How many cubic inches are there in a box 3 in. long, 4 in. wide, and 2 in. high?

10. How many cubic yards are there in 81 cu. ft.?

### Written.

1. Find the contents in cubic feet and also in cubic inches of a stick of timber 18 in. square at the end and 24 ft. long.

2. How many cubic yards of earth must be removed in digging a cellar 36 ft. long, 24 ft. wide, and  $6\frac{1}{2}$  ft. deep?

3. My sleeping room is 10 ft. long, 9 ft. wide, and 8 ft. high. If I breathe 10 cu. ft. of air in 1 min., how long a time will it take me to breathe as much air as the room contains?

4. How much will it cost to bronze a cube each face of which is 6 ft. square at  $\frac{1}{4}$  cent a square inch?

5. How much clover hay is there in a mow 42 ft. long, 20 ft. wide, and 22 ft. deep, allowing 600 cu. ft. to the ton?

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6. The length, breadth, and thickness of a solid are respectively 9 ft., 10 ft., and 7 ft. What is its contents in cubic feet? in cubic yards? in cubic inches?

7. Find the contents in cubic feet of a room 15 ft. long, 11 ft. wide, and 8 ft. high.

8. How many cubic yards of earth must be dug for a cellar 54 ft. long, 32 ft. wide, and 8 ft. 3 in. deep?

9. How many cubic inches are there in a rectangular block of marble 8 ft. long, 6 ft. wide, and  $3\frac{1}{2}$  ft. thick?

10. How many cubic feet of wood can you pile in a shed 20 ft. long, 10 ft. wide, and 8 ft. high?

## LXXVIII

## Oral.

Rapidly add; then subtract:

8	10	12	18	17	20	12	23	25	27	41	20	16	17	30
6	9	5	4	6	10	10	9	6	9	6	20	9	4	8
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

1. Harry has 13 cents in one pocket, 42 cents in another, and 31 cents in a little bag. How much money has he?

2. James had 3 hens. One hatched 13 chickens, another 12, and the other 10. How many did the three hens hatch?

3. If May loses 16 cents of the 25 cents her mother gave her, how many will she have left?

4. Lucy has 18 hens and Jane  $\frac{1}{3}$  as many. How many has Jane? How many have both?

5. How many square inches does a 6-inch square measure? If each side of a triangle is 8 in., how many inches around does it measure?



Rapidly add; then subtract:

9	18	25	32	35	29	62	75	48	24	60	50	40	70	80
7	15	25	27	8	19	35	23	16	8	49	38	27	29	35
<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>

35	56	37	60	28	45	59	23	54	38	71	62	53	90	60
7	8	15	35	13	27	38	17	16	9	47	36	48	54	22
<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>

6. Harry had 32 marbles and sold  $\frac{1}{4}$  of them. How many did he sell? How many had he left?

7. How much will 3 qt. of nuts cost at 4 cents a pint?

8. If 3 oranges cost 5 cents each, how much will a dozen cost?

9. Our cow gives  $1\frac{1}{2}$  gal. milk a day. At 7 cents a quart, how much money do I get for the milk in a week?

10. If I pay 3 cents a quart for picking berries which I sell for 15 cents a quart, how much do I gain in selling 60 qt.?

### Written.

1. How much will 367 bu. of potatoes cost at \$2.25 cents a bushel?

2. A farmer raised 290 bu. of buckwheat, 785 bu. of wheat, 596 bu. of corn, and 689 bu. of oats. How many bushels of grain did he raise?

3. If a barrel of sugar weighs 243 lb. and costs the grocer \$10.85, what profit does he make by selling it at 6 cents a pound?

4. A farmer's wife took to a store :

13 doz. eggs worth 19 cents a dozen,  
 14½ lb. butter worth 24 cents a pound, and  
 23 lb. of dressed fowl worth 14 cents per pound.

She bought at the store :

5 lb. of coffee at 38 cents a pound,  
 6 lb. of rice at 8½ cents a pound, and  
 25 lb. of sugar at 6 cents a pound.

How much money in addition to her purchases should she receive ?

5. Add: 428.356

29.438

51.097

34.253

8.756

11.482

15.943

506.042

6. Three men bought a building for \$47,956. If the first paid \$21,706 and the second \$9575, how much remained for the third to pay?

7. A lady bought 9 yd. of silk for \$11.25. How much would 6 yd. of the same goods cost? (Indicate the operations before working the example.)

8. Divide 241,356 by 1010. Prove the answer.

9. Multiply 4030 by 5700. Prove the answer.

10. A certain news office prints 7800 copies of its papers each day. How many copies, at this rate, does it print in 312 da.?

## LXXIX

Oral.

Rapidly add:

4	4	3	4	3	5	7	3	1	5	8	3	2	4	9	3	3	3	2	6
4	3	4	5	1	1	3	1	5	8	3	2	4	9	3	3	3	2	3	8
3	1	5	1	3	7	1	5	8	3	2	4	9	3	3	3	2	9	1	5

1. If I divide 13 qt. among 39 people, how much will each person receive?

2. How many cents are there in  $\$ \frac{1}{3}$ ? How many cents are there in  $\$ \frac{2}{3}$ ?  $\$.12\frac{1}{2}$  is what part of a dollar?  $\$.75$  is what part of a dollar?

3.  $4 \times 13, - 17 = ?$   $5 \times 14, - 15 = ?$

4. If a watch costs \$60 and a chain  $\frac{3}{4}$  as much, how much do they both cost?

5. If 6 eggs cost 12 cents, how much will 6 doz. cost?

Rapidly add:

1	5	6	2	2	4	5	3	4	3	9	3	2	2	4	7	3	3	3	6
5	6	2	2	4	5	3	3	5	8	5	3	3	4	7	3	1	3	8	6
6	2	2	4	5	3	3	4	1	7	3	2	4	7	3	3	6	8	1	3

6. Each of 16 class rooms has 50 desks. How many desks are there in all the rooms?

7. How much will 108 in. cost at 5 cents a yard?

8. A girl who is 16 yr. old is just  $\frac{4}{5}$  as old as her sister. How old is her sister?

9.  $7\frac{1}{2}$  plus  $2\frac{2}{3} = ?$   $9\frac{1}{3} + 3\frac{1}{2} = ?$

10. I sold my watch for \$60 and lost \$10. How much did it cost me?

Written.

1. If  $87\frac{7}{8}$  lb. of flour are taken from a full barrel, how many pounds are left?

2. Find the cost of 26,500 lb. of hay at \$14.50 a ton.

3. What part of a pound Avoirdupois is 8 oz.? How much will 8 oz. cost at \$7.26 a pound?

4. A family bought 16 lb. of sugar at  $6\frac{1}{4}$  cents a pound. How much did it cost them?

5. How many bottles holding 3 pt. each will be required to hold 5 gal. and 1 qt.?

6. If  $\frac{7}{8}$  of a barrel of flour is worth \$5.60, how much is a barrel worth?

7. Put into bill form and receipt:

. July 21, 1909, Chas. Post, 1342 Fifth Avenue, New York City, bought of Adams & Howe, 456 Tenth Street, 250 lb. butter at \$.28 $\frac{1}{2}$ ; 15 lb. coffee at \$.28 $\frac{1}{4}$ ; 241 lb. tea at \$.25; 1 box soap at \$4.25.

8. Put the following into bill form, find the amount, and receipt it for payment (use a proper form and name):

8 boxes raisins at \$6.25; 150 lb. sugar at 7 $\frac{1}{8}$  cents; 12 lb. currants at 20 $\frac{1}{4}$  cents; 52 gal. kerosene at 12 $\frac{1}{2}$  cents; 12 $\frac{1}{2}$  lb. butter at 40 cents; 25 lb. lard at 16 cents; 3 bbl. potatoes at \$1.75; 1 bbl. flour at \$10.75; 4 bags feed at \$1.12 $\frac{1}{2}$ .

9. If  $\frac{4}{5}$  of a yard cost \$1.40, how much will 2.25 yd. cost?

10. I paid \$ $\frac{1}{2}$  for a basket of grapes. How much should I have to pay for 5 $\frac{1}{2}$  baskets?

### LXXX

#### Oral.

Rapidly multiply by 6; then divide by 3:

20; 25; 42; 36; 28; 9; 71; 21; 15; 25; 27; 32; 48.

Add 7 to each of the following numbers:

15; 23; 17; 25; 16; 19; 27; 32; 54; 49.

1. If  $\frac{3}{4}$  of a farm is worth \$600, how much is the whole farm worth?

2. How much will 3 qt. of milk cost at 2 cents a pint?
3. How many square yards are there in a floor 8 ft. long by 9 ft. wide?
4. How much will 8 books cost at \$1.25 a book?
5. Reduce  $\frac{9}{72}$  to lowest terms.

Rapidly multiply by 7; then divide by 4:

18; 25; 32; 45; 16; 20; 48; 13; 27; 29; 16; 20;  
32; 48; 56; 28; 33; 19; 28; 36.

Add 8 to each of the following numbers:

17; 22; 33; 65; 19; 27; 32; 45; 18; 16.

6. From  $\frac{1}{2}$  of 24 take  $\frac{1}{3}$  of 5.
7. How much will  $2\frac{1}{4}$  lb. of meat cost at 16 cents a pound?
8. Fred has a quarter, 2 dimes, and 3 cents. At 3 cents each, how many oranges can he buy?
9. Counting 8 oz. to a cup, how many pounds do 5 cups of sugar weigh?
10. How many yards of string will it take to go around a flower bed 4 ft. long and 3 ft. wide?

### Written.

1. A room is 21 ft. square and 14 ft. high. How many yards of carpet 1 yd. wide will cover the floor, and how much will it cost at \$1.25 a yard?
2. How much will it cost to paint four walls of the room (in example 1) at 40 cents a square foot?
3. Find the expense of painting the ceiling of the room (in example 1) at 50 cents a square foot.

4. How much shall I have to pay to put picture molding around the room (in example 1) at 5¢ a foot?

5. How many cubic feet of space are there in the room (in example 1)?

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6. If a plot of ground, 17 A., is cut up into 34 equal lots, how many square rods will there be in each lot?

7. A piano was sold for \$450, which was  $\frac{3}{4}$  of what it cost. How much did it cost?

8. A lady paid \$12.50 for a chain, which was  $\frac{2}{3}$  of what she paid for her watch. How much did she pay for the watch?

9. \$360 is  $\frac{4}{5}$  of the cost of some land at \$81 per acre. How many acres are there?

10. Five eighths of 24 is how many fourths of 20?

## FIFTH MONTH

### GENERAL REVIEW

#### LXXXI

##### Oral.

Rapidly answer :

$$19 \times 4, + 5, + 9, \times 5, + 6, + 17, \times 18, + 7, + 3, + 16 = ?$$

$$17 \times 4, + 5, + 8, + 6, + 3, + 2, + 5, + 14, + 10, \times 8, + 9, \\ + 8, - 1, + 7 = ?$$

Beginning with 3, count by 4's to 102.

Beginning with 6, count by 4's to 106.

1. Jane picked 15 white roses and 14 red ones. How many roses did she pick in all ?

2. James paid 15 cents for his lunch, 10 cents for car-fare, and had 25 cents left. How much money had he at first ?

3. If 65 of the 72 apples that were on a tree dropped off, how many remained on the tree ?

4. If Harry had 9 cents more, he would have 17 cents. How many has he ?

5. If you sell something for 66 dollars and gain 16 dollars, how much did it cost you ?

Rapidly answer :

$$6 + 7, \times 5, + 5, + 2, + 18, \times 4, + 4, + 5, + 3, \times 6, + 2, + 11, \\ \times 8, + 1, + 3, \times 7, + 8 = ?$$

$$98 + 7, + 7, + 8, + 7, + 12, \times 20, + 3, + 12, - 3, + 12, \times 10, \\ \times 3, + 10, + 12, + 5, + 1 = ?$$

Beginning with 7, count by 6's to 103.

Beginning with 4, count by 6's to 100.

6. Robert rode his bicycle 22 mi. on Monday, 18 mi. on Tuesday, and 50 mi. on Wednesday. How many miles did he ride in 3 days?

7. A man traveled 8 mi. one day, 30 mi. the next day, and 40 mi. the next day. How many miles did he lack of traveling 100 mi.?

8. A piece of ground cost \$13 for improvements, and \$36 for cultivation. Its products amounted to \$48. How much did the owner lose?

9. From 106 take the sum of 55 and 44.

10. I had a certain number of sheep. I bought 7, sold 11, and then had none left. How many sheep had I at first?

### Written.

1. Copy, point off into periods, and read: 235; 3145; 43020; 304002; 2347896; 8463736.

Write in figures: five million, three hundred forty-six thousand, seventy-eight; ten thousand, seven hundred six; four hundred twenty thousand; thirty five million, twenty-three thousand; forty-five dollars, forty cents; one thousand two hundred dollars, thirty-one cents; seven mills; two thousand five dollars; ninety thousand dollars; nine cents, five mills; two thousand dollars, two cents, two mills.

2. Add: \$739.56, \$985.625, \$2764.045, \$1614.375, and \$290.17.

3. Express in Arabic notation: XLIV; LXX; CXIX; CCLIV; MDCC; MDCCCXCIX.



4. Express the following numbers in Roman notation : 110; 1365; 2000; 342; 17; 1909; 1776; 1171; 3101; 978; 1492; 1910; 1898.

5. A grain dealer bought wheat for \$7500, corn for \$12,080, rye for \$10,000, and oats for \$2000. He sold the wheat at a profit of \$1500, the corn at a profit of \$2200, the rye at a profit of \$1200, and the oats at cost. How much did he receive for the whole?

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6. Add 324 thousand 6 hundred 85; 237 thousand 418; 2 million, 46 thousand 736; 14 million 3 hundred 5 thousand, 4 hundred 90; and 5 million, 6 thousand 7 hundred 39; seven hundred twenty-five million, two hundred two thousand, three hundred ninety-eight.

7. A merchant paid his bookkeeper \$1200, 2 salesmen \$650 each, and a boy \$250. What amount of salaries did he pay?

8. A lady bought a stove for \$23.50, a sideboard for \$18, a table for \$9.50, dishes for \$25, a bedroom suite for \$40, a carpet for \$13.75, a set of chairs for \$9, a lamp for \$2.65, and an organ for \$85. What was the amount of the entire bill? (Write this in the form of a bill and receipt the bill.)

9. A man having a fortune of \$18,000 willed \$7500 to his wife, \$4500 to his daughter, \$1500 to his mother, and the remainder to his son. How much did he leave to his son?

10. A merchant bought goods of a manufacturer amounting to \$3465, and paid him cash \$1637.85. How much did the merchant still owe?

## LXXXII

## Oral.

Rapidly count :

By 7's from 0 to 70.

By 6's from 2 to 80.

By 7's from 1 to 85.

By 6's from 3 to 99.

By 9's from 0 to 90.

By 9's from 1 to 100.

By 9's from 2 to 92.

By 9's from 3 to 102.

By 4's from 3 to 67.

By 4's from 5 to 73.

1. A man dies worth \$1200. He leaves \$800 to his daughter and the remainder to his son. How much does his son receive?

2. How many minutes are there in 12 hr.?

3. How many hours are there in 20 da.?

4. At \$100 an acre, how much will 25 A. of ground cost?

5. What is the cost of 300 lb. of sugar at 5 cents a pound?

---

Rapidly give the answers :

Add 8 to each of these numbers : 3; 2; 9; 5; 1; 6; 7; 0; 4; 8.

Add 7 to each of these numbers : 5; 4; 8; 6; 7; 0; 1; 9; 2; 3.

Subtract 8 from each of these numbers : 10; 13; 17; 11; 9; 19; 12; 18; 16; 15; 8; 14; 20; 21.

Subtract 7 from each of these numbers : 20; 7; 17; 13; 18; 14; 11; 9; 10; 8; 12; 16; 15.

6. A boy paid \$5.75 for a coat and a pair of shoes ; for the shoes he paid \$2.22. How much did he pay for the coat?

7. If a man earns \$9 in 1 week, how many dollars can he earn in March and April together?

8. New York is 140 mi. from Albany. If a man travels this distance six times, how many miles does he travel?

9. Find how much a boy paid for 3 slates at 12 cents apiece and 4 pencils at 5 cents apiece.

10.  $4 \times 6, + 7, \times 9 = ?$      $7 \times 24, - 18, \times 8 = ?$

**Written.**

1. Add: 36,782      2. Add horizontally 14,032, 675,  
45,613      1089, 7638, and 976,472.

27,164      3. Subtract and prove the sub-  
63,843      traction in each case:  $9000 - 7356$ ;  
85,267       $46,031 - 11,234$ ;  $\$8006 - \$5237.45$ .

24,651      4. What is the product of  
32,789       $673 \times 100$ ? of  $5163 \times 1000$ ? of  $714$   
52,483       $\times 700$ ? of  $3805 \times 9000$ ? of  $4203 \times$   
380?

5. A planter put up his cotton into 375 bales, averaging 436 lb. each. How many pounds of cotton did he have? How much was it worth at 40 cents a pound?

6. In a block of buildings there are 38 buildings, each building containing 27 windows, and each window 12 panes of glass. How many panes of glass are there in the whole block of buildings?

7. Two ships start from the same place and sail in opposite directions, one going 52 mi. a day and the other 75 mi. a day. How far apart will they be in 54 da.? (Make a diagram showing the distance traveled.)

8. Mr. Thompson's annual income is \$5475 and his average daily expenditure is \$8.25. How much can he save in a year of 365 da.?

9. Two travelers are 5327 mi. apart. If they travel toward each other, one at the rate of 49 mi. a day and the other at the rate of 37 mi., how far apart will they be at the end of 54 da.?

Multiply 70,900 by 40,300.

$$\begin{array}{r}
 70900 \\
 \times 40300 \\
 \hline
 2127 \\
 2836 \\
 \hline
 2857270000
 \end{array}$$

10. Multiply 37,800 by 29,700.

### LXXXIII

#### Oral.

Rapidly answer :

$$\begin{array}{llllll}
 28 + 7 = ? & 55 + 5 = ? & 72 \div 6 = ? & 90 \div 9 = ? & 72 \div 8 = ? \\
 9 + 3 = ? & 22 + 2 = ? & 48 \div 4 = ? & 77 \div 11 = ? & 108 \div 12 = ?
 \end{array}$$

1. One basket contains 52 apples, another 63, and a third 7 times the difference of the first 2 baskets. How many apples are there in the 3 baskets?

2. What is the price of a barrel of flour, when 9 bbl. cost \$54? What is the price of 3 bbl. at the same rate? What is the price of  $4\frac{1}{2}$  bbl. at the same rate?

3. When 96 cents will buy 4 doz. eggs, what is the price of a dozen? of 2 doz.? of 3 doz.?

4. When flour is \$6 a barrel, how many barrels of flour will \$1200 buy?

5. If a box will hold 200 oranges, how many boxes will hold 8000 oranges? \_\_\_\_\_

Rapidly answer:

$$\begin{array}{llllll} 21+7=? & 54+6=? & 28+4=? & 55+11=? & 18+3=? \\ 84+7=? & 27+9=? & 72+8=? & 120+10=? & 12+3=? \end{array}$$

6. At 40 cents a pound, how many pounds of coffee can be bought for \$9.60?

7. A woman exchanged berries for sugar, giving 10 qt. of berries at 8 cents a quart and 25 cents in money for 21 lb. of sugar. How much did the sugar cost per pound?

8. If 6 arithmetics at 40 cents each, together with 5 histories, cost \$5, how much do the histories cost apiece?

9. A piece of work can be done by 21 men in 7 da. How long will it take 15 men to do the same work? 3 men?

10. How much will 5 doors cost, if I pay \$56 for 8 of them?

**Written.**

1. Find the value of :  $99 \times 8, + 51, \times 10, - 7, \times 104, + 26.$

2. Two vessels start from the same point and travel in opposite directions, one at the rate of 75 mi. a day and the other at the rate of 85 mi. a day. How far apart will they be at the end of 15 da.? (Make a diagram showing the distances traveled.)

3. Divide 300,165 by 327 ; 51,980 by 190.

$$4. \overline{(100-1) \div 9} - \overline{(97+20) \div 13} + \overline{(4+8) \div 4} = ?$$

5. In 17 mi. there are 29,920 yd. How many yards are there in 34 mi.? \_\_\_\_\_

6. Add : 46,275  
 71,523  
 32,764  
 84,657  
 61,246  
 57,438  
 74,219  
 62,105  
 83,246  
27,513

7. Mr. Adams has \$10,000 which he wishes to invest in real estate. If he should buy a house for \$4500, how many acres of land could he buy with the balance at \$110 an acre?

8. If 9 horses can be bought for 1521 dollars, how many horses can be bought for 1352 dollars?

9. Twice the sum of two numbers is 36,768 and  $\frac{1}{2}$  of one number is 8756. What is the other number?

10. The sum of two numbers is 458 and the greater is 346. What is the product of the two numbers?

### LXXXIV

#### Oral.

Rapidly answer :

91 + 15 = ?	74 - 39 = ?	562 × 10 = ?	20 ÷ 4 = ?
34 + 47 = ?	87 - 63 = ?	726 × 100 = ?	90 ÷ 10 = ?
34 + 73 = ?	93 - 87 = ?	234 × 20 = ?	28 ÷ 7 = ?
73 + 72 = ?	64 - 26 = ?	56 × 200 = ?	100 ÷ 10 = ?
47 + 38 = ?	63 - 47 = ?	14 × 30 = ?	72 ÷ 12 = ?
38 + 28 = ?	72 - 47 = ?	28 × 300 = ?	121 ÷ 11 = ?
28 + 52 = ?	80 - 67 = ?	19 × 8 = ?	72 ÷ 9 = ?
83 + 27 = ?	76 - 49 = ?	19 × 80 = ?	64 ÷ 8 = ?
98 + 12 = ?	76 - 37 = ?	19 × 800 = ?	36 ÷ 9 = ?
82 + 29 = ?	74 - 64 = ?	25 × 50 = ?	48 ÷ 6 = ?

1. If 48 bu. of corn cost \$24, how much must be paid for 12 bu. ?

2. Separate the following numbers into two factors :  
84; 108; 56; 72; 96; 64; 49.

3. Reduce  $9\frac{3}{4}$  to 4ths;  $12\frac{5}{8}$  to 6ths.

4. Reduce  $5\frac{1}{8}$  to a mixed number.

5. Reduce to lowest terms:  $\frac{12}{16}$ ;  $\frac{24}{30}$ ;  $\frac{18}{27}$ ;  $\frac{48}{72}$ ;  $\frac{63}{84}$ .

Rapidly answer:

$$6 + 7, \times 5, + 5, + 2, + 8, \times 4, + 4, + 5, + 3, \times 6, + 11 = ?$$

$$28 \div 7, + 7, + 8, + 4, + 7, + 10, \times 12, + 3, + 10, + 7 = ?$$

$$64 \div 8, + 5, + 6, + 6, - 7, \div 6, \times 11, + 4, + 3, + 4 = ?$$

6. Reduce  $\frac{3}{4}$ ,  $\frac{5}{8}$ , and  $\frac{7}{8}$  to fractions having the same denominator.

7. Reduce to fractions having similar denominators:  
 $\frac{1}{2}$ ,  $\frac{1}{3}$ ,  $\frac{2}{4}$ ,  $\frac{3}{8}$ ,  $\frac{5}{8}$ , and  $\frac{5}{12}$ .

8. Find the sum of  $\frac{2}{3}$ ,  $\frac{5}{8}$ , and  $\frac{5}{8}$ .

9. If a man bought a colt for \$55, and sold it for  $\frac{1}{2}\frac{3}{4}$  of the cost, how much did he receive for it?

10. A real estate agent bought at one time  $\frac{7}{8}$  of an acre of land and at another  $\frac{3}{4}$  of an acre. How much did he buy all together?

Written.

1. The difference between two numbers is 178. One of the numbers is 526. What is the other number?

2. A newsboy buys papers at 18 cents a dozen and sells them at 2 cents apiece. How much does he clear in 52 wk. if he averages 8 papers a day, 6 days a week?

3. Reduce  $51\frac{7}{15}$  to an improper fraction.

4. Reduce to whole or mixed numbers:  $\frac{1500}{750}$ ;  $\frac{477}{80}$ .

5. Reduce  $\frac{7}{8}$  to 56ths;  $\frac{11}{12}$  to 48ths.

6.  $\frac{84}{108} = ?$   $\frac{24}{36} = ?$   $\frac{240}{288} = ?$   $\frac{220}{480} = ?$   $\frac{140}{220} = ?$

7. What is the sum of  $\frac{5}{8}$ ,  $\frac{2}{3}$ , and  $\frac{5}{12}$ ?

8. Mr. Brown finds that his furnace consumed last winter  $2\frac{3}{4}$  T. of coal in December,  $2\frac{5}{8}$  T. in January, and  $3\frac{1}{16}$  T. in February. How much coal was burned during the three winter months?

9. A dry goods merchant bought 2 pieces of cambric, one containing  $42\frac{5}{8}$  yd. and the other  $43\frac{3}{4}$  yd. After selling  $69\frac{7}{8}$  yd., how many yards remained?

10. From a piece of silk containing  $30\frac{1}{4}$  yd. there were sold  $3\frac{1}{4}$  yd.,  $4\frac{5}{8}$  yd., and  $12\frac{1}{2}$  yd. How many yards remained?

### LXXXV

#### Oral.

Rapidly find:

$\frac{1}{2}$  of 12; of 10; of 14; of 16; of 20; of 24.

$\frac{1}{3}$  of 12; of 15; of 21; of 27; of 30; of 36.

$\frac{1}{4}$  of 12; of 16; of 24; of 32; of 40; of 44.

$\frac{1}{5}$  of 15; of 25; of 30; of 40; of 50; of 55.

$\frac{1}{6}$  of 12; of 24; of 36; of 48; of 54; of 72.

1. How much will  $\frac{3}{4}$  of a yard cost, if 1 yd costs \$16?

2. If a violin costs me  $\frac{1}{3}$  of \$81, how much do I pay for it?

3. My coat cost me  $\frac{2}{3}$  of \$63. How much did I pay for it?



4. A certain field contains  $10\frac{3}{4}$  A. and an adjacent field  $9\frac{1}{2}$  A. How many acres are there in the two fields?

5. One third of a pole was broken off by the wind,  $\frac{1}{8}$  of it was in the mud, and the remainder was in the air. What part of it was in the air?

Rapidly find:

$\frac{1}{7}$  of 14; of 28; of 56; of 35; of 63; of 42.

$\frac{1}{8}$  of 24; of 16; of 40; of 56; of 72; of 64.

$\frac{1}{9}$  of 27; of 36; of 54; of 45; of 72; of 63.

$\frac{1}{10}$  of 20; of 50; of 40; of 80; of 90; of 270.

$\frac{1}{12}$  of 60; of 24; of 96; of 48; of 72; of 108.

6. If \$64 is  $\frac{2}{3}$  of my money, how much money have I?

7. Eighty-four is  $\frac{4}{7}$  of what number? 18 is  $\frac{3}{8}$  of what number? (Explain these examples with the aid of diagrams.)

8. I spent  $\frac{5}{6}$  and  $\frac{1}{12}$  of my money, and gave away  $\frac{1}{24}$ . How much remained?

9. An overseer hired 8 men to work at \$3 $\frac{3}{4}$  a day. How much do the 8 men receive a day for their work?

10. Eight times  $6\frac{1}{4}$  is twice my age. How old am I?

Written.

1. In a piece of a rope there were  $46\frac{1}{2}$  yd. After a certain amount was sold the piece of rope measured  $16\frac{3}{4}$  yd. How much had been sold?

2. Robert and Michael start for the schoolhouse, from opposite points. Robert reaches school after walking  $3\frac{7}{8}$  mi., and Michael after walking  $4\frac{5}{12}$  mi. How far apart were they at first?

3. Mr. Taylor has a bin that will hold 120 bu. of corn. He put in  $16\frac{5}{8}$  bu.,  $35\frac{5}{8}$  bu., and  $57\frac{1}{8}$  bu. After selling 156 pk. out of what he put in, how much more corn could he then put into the bin?

4. If \$96 is the cost of  $\frac{2}{3}$  of an acre, how much will 1 A. cost?

5. If \$6000 is  $\frac{2}{3}$  of the value of my farm, what is  $\frac{3}{4}$  of its value?

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6. If a cubic foot of gold weighs  $1203\frac{3}{4}$  lb., and a cubic foot of silver weighs  $625\frac{1}{4}$  lb., how much more does a cubic foot of gold weigh than the same quantity of silver?

7. A farmer owns  $87\frac{5}{8}$  A. of land. His wife owns  $42\frac{3}{4}$  A. and his son  $29\frac{1}{2}$  A. How many acres do they own together?

8. I sold my farm for \$3360, which was  $\frac{4}{5}$  of its value. Find its value.

9. If \$455 is  $\frac{7}{8}$  of my salary, what is my salary?

10. What number taken from 8 times  $12\frac{2}{3}$  will leave  $70\frac{3}{4}$ ?

### LXXXVI

#### Oral.

Rapidly answer:

24 is  $\frac{2}{3}$  of what number?  $\frac{4}{5}$  of what number?  $\frac{3}{4}$  of what number?  $\frac{1}{2}$  of what number?  $\frac{5}{6}$  of what number?  $\frac{1}{3}$  of what number?

18 is  $\frac{3}{4}$  of what number?  $\frac{2}{10}$  of what number?  $\frac{2}{5}$  of what number?  $\frac{6}{11}$  of what number?  $\frac{2}{7}$  of what number?  $\frac{3}{4}$  of what number?

56 is  $\frac{7}{8}$  of what number?  $\frac{8}{9}$  of what number?  $\frac{3}{4}$  of what number?  $\frac{4}{5}$  of what number?  $\frac{7}{9}$  of what number?  $\frac{2}{3}$  of what number?

1. How many hundredths of a dollar is: 2¢? 3¢? 4¢? 5¢? 8¢? 10¢? 12¢? 17¢? 22¢? 28¢? 37¢? 93¢?

2. Express in decimal form: ten hundredths; 60 dollars and 40 cents; 45 dollars; 7 dimes and 3 cents; 87 hundredths; 256 hundredths.

3. Express in decimal form:  $\frac{3}{4}$ ;  $\frac{3}{40}$ ;  $.1\frac{1}{10}$ ;  $.1\frac{12}{100}$ ;  $.01\frac{1}{2}$ ;  $.1\frac{1}{4}$ ;  $.4\frac{3}{4}$ ;  $\frac{7}{10}$ ;  $\frac{17}{10}$ .

4. .5 plus .2 = ? .36 plus .63 = ? .3 plus .4 = ? .36 plus .64 = ? .5 plus .6 = ?

5. James had .5 of a dollar and found .7 of a dollar. How much had he then? \_\_\_\_\_

Rapidly answer :

72 is  $\frac{4}{5}$  of what number?  $\frac{3}{4}$  of what number?  $\frac{3}{4}$  of what number?  $\frac{5}{6}$  of what number?  $\frac{8}{9}$  of what number?  $\frac{9}{10}$  of what number?

60 is  $\frac{5}{12}$  of what number?  $\frac{1\frac{2}{3}}{1\frac{2}{3}}$  of what number?  $\frac{2}{3}$  of what number?  $\frac{1}{3}$  of what number?  $\frac{3}{4}$  of what number?  $\frac{4}{5}$  of what number?

36 is  $\frac{9}{10}$  of what number?  $\frac{9}{10}$  of what number?  $\frac{4}{5}$  of what number?  $\frac{3}{4}$  of what number?  $\frac{3}{4}$  of what number?  $\frac{1\frac{2}{3}}{1\frac{2}{3}}$  of what number?

6. .7 minus .4 = ? .75 minus .5 = ? .8 minus .6 = ? .29 minus .15 = ? .85 minus .6 = ?

7. Express the decimal  $.62\frac{1}{2}$  as a simple fraction in its lowest terms.

8. Read  $\frac{5}{8}$  as a decimal.

9. At 80 cents a pound, how much will 2 oz. of tea cost?

10. How much will 48 lamp chimneys cost at  $33\frac{1}{2}$  cents a dozen?

### Written.

1. Add: 301.5                      2. Add 3.75 T., 14.165 T.,  
           7.512                    375.162 T., 54.812 T., 18.5 T.,  
       6140.11                    21.75 T., and 25 T.

114.3                      3. A merchant's sales were as  
       9.763                    follows: On Monday, \$470.45; on  
       6.705                    Tuesday, \$307.29; on Wednesday,  
       678.9                    \$584.40; on Thursday, \$579.48;  
                                   on Friday, \$225.36; on Saturday,

\$617.21. Find the total amount of his sales.

4. Find the difference between .76 and .076.

5. A lady's dress cost \$13 $\frac{3}{4}$ , her bonnet \$5 $\frac{1}{4}$ , her shoes \$2 $\frac{1}{2}$ , her fan \$ $\frac{3}{4}$ . Thirty dollars were presented in payment. How much change was received?

6. What is the sum of 897 and 9 thousandths; 17 hundredths; 18 and 18 thousandths; 98 hundredths; 167 tenths; 55 and 47 thousandths?

7. Find the sum of 30.062, 27.4, 400.07, 4.019, 947.13, 86.065, and 729.006.

8. From a piece of cloth containing 67.35 yd., 24 $\frac{1}{2}$  yd. were cut. How many yards remained?

9. Find the value of 84 times 1.13 — (66, — 1.2 times 24) + 100 times (4 times .018, + 189).

10. A clerk has a yearly salary of \$1000. He pays \$312 for board, \$157.50 for clothing, and \$372.25 for all other expenses. How much does he save in a year?

## LXXXVII

## Oral.

Rapidly add ; then subtract :

21	61	21	91	51	23	83	43	23	63	22	72	22	85	72
14	14	13	13	13	16	16	16	18	18	18	18	15	19	18

Beginning with 4, count by 8's to 100.

Beginning with 8, count by 9's to 98.

1. If 3 apples cost 5 cents, how much will 9 apples cost?

2. If 12 yd. of ribbon cost 24 cents, what is the cost of 9 yd.?

3. Take  $\frac{3}{8}$  away from  $\frac{5}{8}$ .

4.  $\$5\frac{1}{2} + \$2\frac{1}{2} = ?$   $\$3\frac{1}{4} + \$4\frac{1}{2} = ?$   $\$6\frac{1}{3} + \$7\frac{2}{3} = ?$

5. I bought butter for 39 cents, rolls for 5 cents, and 3 eggs for 9 cents. How much change did I get from a one-dollar bill?

Rapidly add ; then subtract :

25	55	75	22	92	35	65	95	75	85	37	67	87	73	65
17	17	17	17	17	28	28	38	48	58	29	29	39	29	48

Beginning with 7, count by 6's to 103.

Beginning with 5, count by 7's to 103.

6. I bought a book for 75 cents, a pencil for 8 cents, a slate for 16 cents. How much did I spend?

7. A farmer raised 168 bu. of grain and sold  $\frac{1}{3}$  of it. How much did he sell?
8. Change  $5\frac{1}{5}$  to a mixed number.
9. At  $5\frac{1}{2}$  cents each, what is the cost of a dozen pens?
10. If a man saves \$12 a month, how long will it take him to save \$720?

**Written.**

1. How much will 9 qt. of strawberries cost at 16 cents a quart and 5 qt. of nuts at 14 cents a quart?
  2. How much change should I get from a \$5 bill, if I buy 3 gal. 1 qt. of molasses at 48 cents a gallon?
  3. A contractor pays 28 men \$1.75 a day each. How much does he pay out every week to all of his men?
  4. A man's estate is valued at \$24,400. If he leaves  $\frac{1}{4}$  of it to his 4 sons, and the remainder of it to his widow, how much does each son receive? How much does the widow receive?
  5. How much will 30 carpenters earn in a month of 26 days, working 8 hr. a day at the rate of  $\$ \frac{1}{3}$  an hour each?
- 
- |  |   |
|--|---|
| 6. Add: $17\frac{1}{2}$<br>$85\frac{1}{4}$<br>$27\frac{3}{4}$<br>$29\frac{5}{8}$<br>$56\frac{1}{3}$<br>$8\frac{5}{8}$<br>$16\frac{2}{3}$ | 7. Multiply 875 by $26\frac{3}{4}$ ; $156\frac{2}{3}$ by 23.<br>8. Divide 834,562 by 365; 745,638 by 320.<br>9. I bought $8\frac{1}{4}$ T. of furnace coal at \$6.25 a ton and $6\frac{3}{8}$ T. of stove coal at \$6.50 a ton. How much did I pay for all?<br>10. Add 2.09, 13.694, 103.05, 40.006, 13.047, 436.8, and 809.36. |
|--|---|

## LXXXVIII

## Oral.

Rapidly give the decimal equivalents of:

$\frac{1}{2}$ ;  $\frac{1}{4}$ ;  $\frac{3}{8}$ ;  $\frac{1}{8}$ ;  $\frac{3}{4}$ ;  $\frac{7}{8}$ ;  $\frac{1}{2}$ ;  $\frac{3}{8}$ ;  $\frac{1}{8}$ .

Rapidly give the equivalents in common fractions of:

.62 $\frac{1}{2}$ ; .66 $\frac{2}{3}$ ; .60; .87 $\frac{1}{2}$ ; .37 $\frac{1}{2}$ ; .20; .12 $\frac{1}{2}$ ; 16 $\frac{2}{3}$ ; .40; .33 $\frac{1}{3}$ .

1. Find the cost of 8 lb. coffee at 30 cents and 2 bu. of potatoes at \$2.25.

2. How much will 1 gross of buttons cost at  $\frac{3}{4}$  cent apiece?

3. How much will 4 $\frac{1}{4}$  lb. of cheese cost at 16 cents a pound?

4. .4 of 200 is how many times 8?

5. If land is \$2000 an acre, what part of an acre can I buy for \$40?

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Rapidly give the decimal equivalents of:

$\frac{1}{8}$ ;  $\frac{3}{8}$ ;  $\frac{5}{8}$ ;  $\frac{7}{8}$ ;  $\frac{1}{4}$ ;  $\frac{3}{4}$ ;  $\frac{1}{2}$ ;  $\frac{3}{4}$ ;  $\frac{1}{8}$ .

Rapidly give the equivalents in common fractions of:

.80; .25; .50; .125; .375; .75; .625; .14 $\frac{2}{3}$ ; .10; .875.

6. At 12 $\frac{1}{2}$  cents a quart, how much will 12 qt. of cherries cost?

7. If 1 pt. of wine costs \$1 $\frac{1}{2}$ , how much will 1 gal. cost?

8. How much will 10 $\frac{3}{4}$  lb. of honey cost at 12 cents a pound?

9. James walked a distance of 18 $\frac{1}{2}$  mi. in 5 hr. How many miles an hour did he walk?

10. How many hours and minutes are you in a school during 1 wk. if you lose no time?

**Written.**

1. Mr. Sawyer went to Kentucky with \$1850 to buy horses. He bought 25 horses, his expenses were \$75, and he had remaining \$100. What was the average cost of each horse?

2. Reduce  $59\frac{7}{16}$  to 15ths.

3. Reduce  $\frac{477}{80}$  to a mixed number.

4. Find the sum of  $\frac{3}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{8}$ ; of  $\frac{3}{8}$ ,  $\frac{5}{8}$ ,  $\frac{7}{12}$ .

5. A bicyclist rode  $27\frac{1}{4}$  mi. on Monday,  $33\frac{1}{8}$  mi. on Tuesday,  $37\frac{1}{4}$  mi. on Wednesday, and  $42\frac{3}{8}$  mi. on Thursday. How far did he ride in the 4 days?

6. A lady went shopping with a \$100 bill. She paid \$18 $\frac{3}{4}$  for a bonnet, \$42 $\frac{3}{8}$  for a dress, and \$35 $\frac{1}{4}$  for a cloak. How much money did she take home with her?

7. Mr. Smith bought 15 T. of coal at \$5 $\frac{1}{4}$  a ton. What was the cost of the coal?

8. How much will 27 qt. of blackberries cost at 18 cents a quart?

9. How much will  $\frac{3}{4}$  of a yard of lace cost, if 2 yd. cost \$4.48?

10. Find the price of 28 $\frac{3}{4}$  yd. of cloth if 5 yd. cost \$18.60.

**LXXXIX****Oral.**

Rapidly add:

6	2	2	5	3	3	4	3	1	3	3	2	4	7	3	3	8	1	8	5
2	2	4	7	9	4	3	1	5	7	2	4	7	3	3	8	3	5	3	8
2	4	5	3	4	6	1	5	9	2	4	7	3	3	8	3	1	8	2	3



1.  $17 + 29 = ?$     $23 + 13 = ?$     $35 + 42 = ?$
2.  $93 + 28 + 35 = ?$     $83 + 12 + 15 + 20 = ?$
3. If I sold a watch for \$90 and gained \$10, how much did it cost me?
4. Mary has 76 cents, which is 19 cents less than her sister has. How much has her sister?
5. If 3 lb. are done up in 7 packages, how many packages will 21 lb. make?

Rapidly add :

---

5	8	5	6	7	3	8	4	7	3	6	3	9	1	5	5	3	2	4	4
2	3	5	6	7	3	8	7	3	9	3	6	9	5	3	3	9	4	4	3
2	2	2	6	7	5	7	6	9	6	1	3	9	5	2	4	4	4	3	3
<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>

6. At 16 cents a gallon, how much will 1 qt. cost?
7. What is the cost of 12 boxes, each containing 6 jars of cream, at  $\$ \frac{1}{2}$  a jar?
8. If  $\frac{1}{2}$  of a pole is in the air,  $\frac{1}{3}$  in the water, and the rest in the earth, how much is in the earth?
9. A lady owes a store bill of  $\$ \frac{3}{4}$ . If she hands the clerk  $\$ \frac{3}{4}$ , how much change should she receive?
10. Three fifths of \$80 is twice what was given for a bureau. What was the cost of the bureau?

**Written.**

1. Write in Roman characters: 361; 567; 893.  
Write in Arabic figures: nine million; the mixed decimal ten and one hundredth; two dollars and three cents; seven thousand seven.
2. Multiply 3020 by 209.
3. Divide 16,236 by 902.

4. I sold a watch for  $\$7\frac{1}{2}$  and gained  $\$2\frac{3}{4}$ . How much did the watch cost me?

5. A grocer bought 80 jars of currant jelly at  $12\frac{1}{2}$  cents a jar and 15 gal. of sirup at  $33\frac{1}{3}$  cents a gallon. How much did he pay for both?

6. If a train travels 35 mi. an hour, what distance will it go between half-past 8 o'clock in the morning and a quarter-past 5 o'clock in the afternoon?

7. If lemons are  $37\frac{1}{2}$  cents a dozen, how many boxes, each containing 240 lemons, can be bought for  $\$120$ ?

8. Write the following decimal fractions as common fractions, and then reduce them to their lowest terms: .625; 4.75; .075; .375; .64; .45.

9. Change the fractions to cents, and then add  $\$45\frac{5}{8}$ ,  $\$16.87\frac{1}{2}$ , and  $\$15\frac{7}{8}$ .

10. Multiply 4 thousandths by 4 units, and add 4 tenths to the product.

### XC

#### Oral.

Rapidly make change from  $\$1.00$  by addition to subtrahend:

$\$.75$ ;  $\$.85$ ;  $\$.63$ ;  $\$.56$ ;  $\$.23$ ;  $\$.48$ ;  $\$.27$ ;  $\$.42$ ;  
 $\$.28$ ;  $\$.96$ ;  $\$.72$ ;  $\$.18$ ;  $\$.14$ ;  $\$.65$ ;  $\$.37$ ;  $\$.29$ ;

1. One fourth of what number is equal to  $\frac{1}{5}$  of 80?

2. Mr. Johnson sells 2 pt. of milk for 6 cents. How much should he receive for 1 gal.?

3. If you take a quart of milk out of a gallon of milk, what part of the milk remains?

4. Fourteen days is what part of 3 wk.?

5. Five ninths of 45 is  $\frac{5}{8}$  of what number?

---

Rapidly make change from \$2.00 by addition to subtrahend:

\$ .50; \$1.75; \$1.23; \$.87; \$1.56; \$1.25; \$.33;  
\$.56; \$1.27; \$1.99; \$.89; \$1.58; \$1.87; \$.48;  
\$.92; \$1.15; \$1.42; \$.64; \$1.59; \$1.32; \$.72.

6. If 5 gr. are used in 1 button, how many buttons can be made from 120 gr. of gold?

7. Find the cost of  $6\frac{3}{4}$  lb. of butter at 30 cents a pound.

8. How much must I pay for 6 spring chickens, each weighing  $2\frac{1}{2}$  lb., at 20 cents a pound?

9. How much will 25 yd. of garden hose cost at 9 cents a foot?

10. How many rails, each 10 yd. long, will be required in building a single-track (double-railed) railroad 5 mi. long?

#### Written.

1. A room is 25 ft. long and 15 ft. wide. Find the area of both ceiling and floor.

2. A room is 27 ft. long and 18 ft. wide. How much will it cost to paint the ceiling at 25 cents a square yard?

3. What is the cost of asphaltting a walk 96 ft. long by 6 ft. wide at 75 cents per square yard?

4. If a carpet is 36 in. wide, how many yards of it will be required to carpet a room 18 ft. by 15 ft.? What will be the cost at \$1.12 $\frac{1}{2}$  a yard?

5. Boston, January 1, 1908, Daniel Chapman & Co., of 362 W. 25th Street, bought of Palmer & Bros., of 98 Washington Street, 67 pairs calf boots at \$3.75; 108 pairs of thick boots at \$2.62; 75 pairs of gaiters at \$1.12; 27

pairs of buskins at 86 cents; 35 pairs of slippers at \$.70; 50 pairs of rubbers at \$1.14. Write this in bill form and receipt the bill.

---

6. A man sold 54.6 A. of land which cost him \$49.60 per acre for \$3000. How much did he gain?

7. How much must be added to 40.173 to make 100?

8. If 1 lb. of butter costs 25 cents, how much will 4 firkins cost, each weighing 56 lb.?

9. A merchant bought a roll of carpet containing 82 yd. for \$45 and sold it for \$.75 a yard. How much did he gain?

10. An errand boy earns \$2.75 a week. In how many weeks will he earn \$49.50?

### XCI

#### Oral.

Rapidly divide each of the following numbers by 6:

84; 72; 96; 90; 78; 108; 120; 102; 126; 144.

Rapidly divide each of the following numbers by 7:

98; 112; 105; 133; 154; 119; 140; 126; 147; 161.

1.  $\frac{1}{2}$  plus  $\frac{1}{4}$  = ?    $\frac{3}{4}$  plus  $1\frac{1}{2}$  = ?    $6\frac{3}{4}$  plus  $\frac{1}{8}$  = ?    $3\frac{3}{4}$  plus  $\frac{8}{8}$  = ?    $5\frac{1}{2}$  plus  $2\frac{3}{4}$  = ?

2. Find the cost of 5 gal. of kerosene at 9 cents and  $1\frac{1}{2}$  lb. of coffee at 28 cents.

3. At 60 cents a pound, how much will .75 of a pound cost?

4. At sight, change  $\frac{3}{4}$  to equivalent fractions having for denominators: 8; 12; 16; 36; 48; 56.

5. Harry picks  $12\frac{1}{4}$  qt. of berries in a day. How many quarts can he pick in a week?

---

Rapidly multiply each number first by 4; then by 3:  
20; 30; 36; 14; 17; 45; 15; 18; 72; 48; 50; 32; 60;  
27; 16; 19; 28; 38; 40; 20; 91; 75; 42; 65; 29; 80.

6. Subtract:  $4 - \frac{2}{3}$ ;  $\frac{3}{4} - \frac{1}{8}$ ;  $\frac{7}{8} - \frac{3}{4}$ ;  $4\frac{1}{4} - 1\frac{1}{2}$ ;  $3\frac{1}{2} - \frac{7}{8}$ .

7. At the rate of 2 for 5 cents, how many oranges can I buy for \$40?

8. Change to equivalent fractions in lowest terms:  
 $\frac{1}{2}$ ;  $\frac{1}{4}$ ;  $\frac{3}{4}$ ;  $\frac{4}{8}$ ;  $\frac{5}{6}$ ;  $\frac{25}{100}$ ;  $\frac{3}{150}$ ;  $\frac{40}{160}$ .

9. A tailor uses  $2\frac{1}{2}$  yd. of cloth for a boy's suit. How many yards are required for 15 suits of this kind?

10. A boy makes  $1\frac{1}{2}$  cents each in selling papers. How much does he make in selling 5 doz. papers?

### Written.

1. How many rods of fence will it take to inclose a field 37 rd. long and 26 rd. wide? (Make an illustrative diagram on the blackboard.)

2. How many telegraph poles 16 rd. apart are there in a mile?

3. How many pints are there in 2.06 bu.?

4. At \$.125 a yard, how much will 200 yd. of cloth cost?

5. From a piece of cloth measuring  $45\frac{1}{2}$  yd. there were sold  $36\frac{3}{4}$  yd. What was the value of the remainder at \$1 $\frac{1}{2}$  a yard?

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6. How many cubic yards of earth must be removed in digging a cellar 16 ft. long, 12 ft. wide, 6 ft. deep?

7. Find the entire surface of a cube the edge of which measures 18 in.

8. If a man spends 75 cents a day during April, May, and June, how much does he spend in those 3 months?

9. How much will 1 bu. 1 pk. of chestnuts cost at 8 cents per quart?

10. How many minutes are there in the month of November?

### XCII

#### Oral.

Rapidly add 9 to each of these numbers; then subtract 5:

13; 5; 9; 8; 12; 15; 7; 19; 6; 18; 10; 11; 14.

1. A man put 5 gal. 2 qt. of sirup into bottles holding 2 qt. each. How many bottles did it require?

2. How many square yards are there in the surface of a walk that is 56 yd. long and  $\frac{3}{4}$  yd. wide?

3. How many quarts are there in a barrel that contains  $2\frac{1}{2}$  bu.?

4.  $(4 \times 9) + \frac{4}{9}$  of 9 = how many times 10?

5. What part of 8 is 5? If 8 oranges cost 16 cents, how much will 5 oranges cost?

---

Count by 6's from 3 to 99; by 7's from 1 to 99.

6. Name the numbers from 10 to 110 which end with 2 and subtract 3 from each number. Subtract 3 from: 6; 7; 5; 12; 8; 9; 4; 13; 17; 19; 18; 11; 10; 16; 15; 14. Subtract by 3's from 100 to 1.

7. How much will 3 qt. of kerosene cost at 40 cents a gallon?

8. How much will 12 doz. eggs cost at  $16\frac{2}{3}$  cents a dozen?

9.  $\frac{1}{2}$  of 18 =  $\frac{3}{4}$  of ?     $\frac{1}{3}$  of 24 =  $\frac{1}{5}$  of ?

10. A boy caught 24 trout and gave 6 of them to his friends. What part of the number that he caught did he give away?

**Written.**

1. A grocer bought 87 lb. of tea at 45 cents a pound and sold it at 63 cents a pound. How much did he gain?

2. Which are worth more, 63 cows at \$38 each or 56 horses at \$75 each? What is the difference in the value?

3. At \$24 per month, how much rent will a man pay in 1 yr. 5 mo.?

4. If  $\frac{8}{10}$  of a class of 55 pupils are promoted, how many are not promoted?

5. What is the cost of fencing a lot 9 rd. square at 12 cents a foot?

---

6. A grocer bought 5 bu. of berries for \$3.20 a bushel and sold them at 15 cents a quart. How much did he gain? How much would he have gained or lost had he sold them at 12 cents a quart?

7. A man having \$100 went to market. He sold 10 bu. of potatoes at \$2.25 per bushel, 2 T. of hay at \$15 per ton, and 25 bu. of oats at 45 cents per bushel. He bought 15 bbl. of flour at \$4.50 per barrel and 12 yd. of broadcloth at \$4.75 per yard. How much money did he have left?

8. A family uses 2 qt. of milk a day. At 24 cents a gallon, how much does the milk cost for May and June?

9. How many minutes are there from 8.10 A.M. to 9.25 P.M.?

10. If a boy bought  $\frac{3}{4}$  of a bushel of nuts for \$2 and sold them for 12 cents a quart, what was his gain?

### XCH

#### Oral.

Rapidly give the answers :

How many gills are there in a quart? Two gills is what part of a quart? A pint is how many times a gill? A quart is how many times a pint? Four pints is what part of a gallon? A gallon is how many times a quart? A gill is what part of a gallon?

1. If a family uses 3 pt. of milk a day, what will the milk bill for one week be if milk is 7 cents a quart?

2. How many 3-in. pieces can be cut from  $1\frac{1}{2}$  yd. of wire?

3. Five sevenths of the pupils of a class number 35. How many pupils are there in the class?

4. Robert walks  $\frac{3}{4}$  of a mile east of Ford's store and James walks  $\frac{1}{4}$  of a mile west of it. How far apart are they then?

5. What part of a ton is 6 cwt.? 8 cwt.? 10 cwt.?

---

Rapidly give the answers :

How many pints are there in a peck? How many pecks are there in a bushel? Eight pints is what part of a peck? Three pecks is what part of a bushel? A bushel is how many times eight quarts? How many times a peck is a bushel? A quart is how many times a pint?



6. A quart of potatoes costs 8 cents. How much will a bushel cost?

7. A peck of onions costs 80 cents. How much will a pint cost?

8. If 5 chairs cost \$80, how much will 15 cost?

9. If 800 is  $\frac{4}{5}$  of a number of men in a regiment, how many men are there in the regiment?

10. James had 56 marbles and lost  $\frac{7}{8}$  of them. How many had he left?

### Written.

1. Add: \$3140.67

488.24

6157.98

786.93

8216.42

629.74

837.27

42.86

297.84

1964.46

2. Add:  $4\frac{1}{2}$

$3\frac{3}{8}$

$7\frac{1}{8}$

$15\frac{5}{8}$

$19\frac{5}{12}$

3. From 6094.003 take 489.068.

4. A boy picks  $12\frac{7}{8}$  qt. of berries in 1 da. How many bushels and quarts can he pick in 24 da.?

5. A man left a fortune of \$96,420. He left  $\frac{2}{3}$  of it to his wife,  $\frac{1}{4}$  of it to his son, and the remainder to a hospital. How much did each receive?

6. A farmer sold  $\frac{3}{4}$  of his farm for \$1200. At the same rate, for what price would he sell  $\frac{3}{4}$  of it?

7. A man owning 80.08 A. of land sold  $6\frac{1}{4}$  A. to one man and 15.75 A. to another. How many acres had he

8. At 50 cents a square foot, what is the value of a lot containing 7096.25 sq. ft.?

9. At \$2.75 a pair, how many pairs of shoes can be bought for \$247.50?

10. How much is  $\frac{1}{2}$  of an acre of land worth at  $3\frac{1}{2}$  cents a square foot?

## XCIV

Oral.

Rapidly add:

2	6	5	4	3	7	5	5	3	5	6	4	5	2	2	5	4	2	5	6
2	5	4	3	7	5	5	4	5	6	5	5	2	2	3	8	3	5	8	4
6	4	3	7	5	5	4	9	6	5	8	7	2	3	5	3	2	6	4	1

1. Twenty-four is  $\frac{4}{5}$  of how many times 10?

2. What part of \$1 is 20 cents? What part is 5 dimes?

3. What part of 1 cwt. is 15 lb.?

4. What part of 1 gal. is 1 qt.? What part is 1 pt.?

5. A farmer having 80 sheep sold  $\frac{7}{10}$  of them. How many had he left?

Rapidly add:

1	5	2	5	4	6	5	7	5	3	5	7	9	5	6	6	5	3	4	6
5	2	5	4	2	5	9	3	5	8	4	7	4	5	7	6	2	5	3	3
2	5	9	2	6	6	3	7	5	4	3	7	5	8	5	2	8	3	3	8

6. If 4 qt. of chestnuts cost 37 cents, how much will 1 bu. cost?

7. If 1 lb. of cheese costs 10 cents, how much will  $5\frac{3}{4}$  lb. cost?

8. A lady paid  $\frac{1}{3}$  of her money for a bonnet,  $\frac{1}{4}$  of it for a shawl, and  $\frac{1}{8}$  for a pair of shoes. What part of her money had she left?

9. A pole stands  $\frac{1}{4}$  in mud,  $\frac{1}{8}$  in water, and the remainder in air. How much of the pole is in the air?

10. Find the difference between  $1\frac{1}{2}$  and  $\frac{3}{4}$ .

**Written.**

1. How much will it cost to carpet a room 30 ft. long by 27 ft. wide, with carpet 1 yd. wide, at \$.75 a yard?

2. What is the width in rods of a field 60 rd. long which contains 15 A.?

3. How many square yards are there in the surface of a blackboard 36 ft. long by 5 ft. wide?

4. Mr. Walker bought a plot of ground 200 ft. long by 100 ft. wide and paid \$8000 for it. Into how many 25-ft. by 100-ft. city lots could he divide it? How much would he gain by selling each lot for \$2700?

5. He wishes to inclose 2 of these lots with a wire fence. How much will it cost him to do so if he pays  $6\frac{1}{2}$  cents a foot for the wire?

---

6. Put the following into bill form and receipt the bill: 8 boxes raisins at \$6.25; 150 lb. sugar at  $7\frac{1}{2}$  cents; 12 lb. currants at 15 cents; 52 gal. kerosene at  $12\frac{1}{2}$ ;  $12\frac{1}{2}$  lb. butter at 40 cents; 25 lb. lard at 16 cents; 3 bbl. potatoes at \$2.50; 1 bbl. of flour at \$10.75; 4 bags feed at \$1.12 $\frac{1}{2}$ .

7. A rectangular field is in length 150 rd., in breadth 130 rd. Find the number of square rods in the field, and also the number of acres.

8. A room 18 ft. wide and 24 ft. long was covered with carpet 1 yd. wide at \$1 per yard. How much did the carpeting cost?

9. I have a rectangular field 180.5 rd. long and 97.75 rd. wide. How many rods of fence shall I have to buy to inclose it?

10. If a lot 60 rd. by 40 rd. is planted in corn and produces 30 bu. to the acre, how many bushels does the owner get in all?

## XCV

## Oral.

Rapidly add :

4	5	5	4	9	8	6	5	3	5	3	8	2	5	7	6	6	9	8	7
6	4	4	4	9	8	6	5	3	5	3	7	2	5	7	6	6	9	7	7
3	4	3	4	9	8	3	5	3	2	2	7	7	3	5	2	6	8	9	7

1. Mr. Jones has 17 bags of clover seed, each containing 2 bu. How much is his clover seed worth at \$5 a bushel?

2. John's mother gave him 25 cents. He bought 3 oranges at 4 cents each and 5 bananas at 2 cents each. How much money had he left?

3. When flour is worth \$6 a barrel, how many barrels will \$1200 buy?

4. If a man receives 50 lb. of sugar in exchange for 25 lb. of cheese at 10 cents a pound, what is the price of the sugar a pound?

5. Multiply 600 by .9; by .08; by .6.

---

Rapidly add:

4	4	5	6	8	7	2	6	2	8	1	1	9	7	2	8	5	9	9	7
6	4	5	6	7	2	6	2	8	1	8	9	6	7	2	8	9	6	9	4
3	9	9	9	2	6	2	8	1	8	1	6	2	9	8	9	9	9	7	4
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

6. If 6 men can do a piece of work in 4 da., how long will it take 3 men to do the same work?

7. At 24 cents for 12 apples, how much will 72 apples cost?

8. If  $\frac{3}{4}$  of a melon costs 30 cents, what is the cost of the whole melon?

9. At  $5\frac{1}{2}$  cents each, how much will 16 cocoanuts cost?

10. Two thirds of 21 is  $\frac{7}{8}$  of what number?

Written.

1. Add: 71,614

26,978

42,573

25,464

68,415

39,186

44,542

48,698

73,285

52,683

2. Add:  $5\frac{1}{2}$

$6\frac{2}{3}$

$4\frac{5}{12}$

$7\frac{3}{4}$

$9\frac{1}{2}$

$5\frac{1}{3}$

$17\frac{7}{12}$

3. Subtract: \$6000.50 — \$2400.70;

$7865\frac{1}{2} - 5298\frac{3}{4}$ .

4. Multiply 653 by 800; 7045 by 646.

5. If a certain factory can make 15,263 buttons in a day, how many buttons at this rate could it make in a month of 26 working days?

---

6. Divide 72,480 by 600; 56,387,263 by 852. Prove the answers.

7. If there are 56 lb. in a bushel of corn, how many bushels are there in 19,320 lb. of corn?

8. Two men start from the same place at the same time, and travel in opposite directions, one at the rate of 25 mi. a day and the other at the rate of 32 mi. a day. How far apart will they be at the end of 8 da. of traveling?

9. Reduce  $51\frac{5}{8}$  to an improper fraction.

10. Reduce  $4\frac{31}{5}$  to a mixed number.

### XCVI

Oral.

Rapidly answer:

$$9 + 8, - 6, + 9, - 3, - 4, + 6, - 10, + 8 = ?$$

$$16 - 8, + 4, - 6, + 3, + 8, - 12, + 8, + 7 = ?$$

$$19 - 12 + 7 - 14 + 6 - 3 + 17 - 10 + 5 + 1 = ?$$

Count by 6's from 4 to 100. Count by 7's from 5 to 103.

1. How many 4ths are there in  $7\frac{3}{4}$ ?

2. Reduce  $\frac{36}{48}$  to lowest terms.

3. How many yards of fringe will it take to put around a table cover 108 in. long and 72 in. wide?

4. How many cubic inches are there in a block of marble 12 in. long, 8 in. wide, and 3 in. thick?

5. How many 2-in. cubes can you put in a box 8 in. long, 4 in. wide, and 2 in. deep? (Make a diagram on the blackboard.)

---

Rapidly answer:

$$20 - 2 - 3 - 4 - 5 + 17 - 9 + 8 - 2 = ?$$

$$5 + 5 + 5 - 2 - 2 - 2 + 9 - 3 - 3 - 3 - 1 = ?$$

$$17 - 9 + 6 - 5 - 1 + 7 - 3 + 4 - 7 + 9 = ?$$

Count by 7's from 6 to 97. Count by 8's from 5 to 101.

6. At  $12\frac{1}{2}$  cents a yard find the cost of 16 yards of lace.
7. I walked .7 of a mile at one time, .3 at another, and .5 at another. How many miles did I walk in all?
8. Jane went shopping with a dollar bill. She bought 3 oranges at 5 cents each, a dozen bananas for \$.25, and 6 apples for 10 cents. How much change did she get?
9. I have a garden plot 9 by 8 ft. How many square feet are there in it? How many square yards are there in it? How many plants a foot apart can I plant in my garden  $\frac{1}{2}$  foot from the edge?
10. How much will it cost to fence the plot (in example 9) at 10 cents a foot?

**Written.**

1. In making a dress, a dressmaker used 15 yd. of silk at 79 cents a yard, 2 doz. buttons at 3 cents each, 2 pieces of soutache braid at 49 cents apiece. She charged \$12 for the making and \$1.50 for findings. What was the amount of her bill?
2. At 24 cents an hour, how much should a man receive who works 8 hr. and 30 min.?
3. Multiply 87.59 by 63. Write the product in words.
4. John Smith bought of Clark and Jones,  $4\frac{1}{2}$  lb. beefsteak at 21 cents; 12 lb. bacon at  $12\frac{1}{2}$  cents. Make out a properly receipted bill.

5. At 8 cents a quart, how much will 8 qt. 1 pt. of milk cost?

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6. Which is the greater,  $\frac{4}{5}$  of 130 or  $\frac{5}{7}$  of 119? What is the difference between them?

7. Which is the greater,  $\frac{5}{7}$  or  $\frac{3}{4}$ ? What is the difference between them?

8. Find the value of  $(6.125 + 8.75 - 9.50) + 25$ .

9. If 90 T. of coal cost \$472.50, what will be the cost of 132 T.?

10. If  $4\frac{1}{2}$  lb. of tea cost \$2.70, how much will  $\frac{1}{2}$  lb. cost? (Use the ratio method.)

### XCVII

#### Oral.

Rapidly add; then subtract:

43	42	60	42	71	74	43	81	25	76	30	26	42	61	37
<u>24</u>	<u>16</u>	<u>19</u>	<u>17</u>	<u>24</u>	<u>22</u>	<u>26</u>	<u>17</u>	<u>12</u>	<u>25</u>	<u>30</u>	<u>13</u>	<u>38</u>	<u>20</u>	<u>19</u>

1. If a girl in a factory receives \$1 $\frac{3}{4}$  for making 4 shirt waists, how much will she receive for making 12 shirt waists?

2. If a man earns \$2 $\frac{3}{4}$  a day, how much does he earn in a week of 6 days?

3. James lives 1 $\frac{1}{2}$  mi. north from the schoolhouse and Henry lives 2 $\frac{3}{4}$  mi. south. How far apart do they live?

4. A man paid \$3 $\frac{1}{2}$  for the use of a boat for 7 days. At that rate how much would it cost to hire it for 21 da.?

5. How much would 3 $\frac{3}{8}$  doz. bananas cost at 12 cents a dozen?

---



Rapidly add ; then subtract :

42	21	41	23	22	41	14	12	21	35	21	42	51	32	40
28	12	14	19	13	41	14	10	21	35	12	42	15	19	40

6. James spent 28 cents for a glove and 12 cents for a bat and 40 cents for a ball. How much did all cost him?

7. If I have 1 pk. 2 qt. 1 pt. of meal, how many more quarts must there be to make a bushel?

8. Two thirds of an apple pie is worth 12 cents, and Mary ate  $\frac{1}{4}$  of the  $\frac{2}{3}$ . What is the value of what she ate?

9. Five sixths of 72 is  $\frac{3}{4}$  of what number?

10. What is the difference between  $\frac{7}{8}$  of a dollar and 75 cents?

Written.

1.  $38,751 + 596 = ?$      $72,501 + 203 = ?$

2.  $6041 \times 807 = ?$      $5100 \times 800 = ?$

3. If 25 suits cost \$625, how much will one suit cost?

4. I sold a house for \$4500 and lost \$800. What was the cost of the house?

5. A man earns \$800 a year. He spends  $\frac{7}{8}$  of it. How much does he save?

6. How many square feet are there in a floor 24 ft. long and 18 ft. wide?

7. How much will  $5\frac{3}{4}$  lots cost if one lot is worth \$164?

8. What is the cost of 40 qt. of milk at 2 cents a pint?

9. I drew \$350 from the bank. This was  $\frac{5}{7}$  of the whole amount which I had in the bank. How much had I in the bank?

10. Add:  $175\frac{3}{4}$   
 $80\frac{1}{8}$   
 $164\frac{1}{2}$   
 $75\frac{1}{4}$   
 $63$   
 $57\frac{5}{8}$

### XCVIII

#### Oral.

Rapidly change to 12ths:  $\frac{2}{3}$ ;  $\frac{3}{4}$ ;  $\frac{5}{6}$ ;  $\frac{1}{2}$ ;  $\frac{1}{3}$ ;  $\frac{1}{4}$ ;  $\frac{2}{5}$ .

1. If 72 cents are paid for 18 lead pencils, how much would 9 pencils cost at the same rate?

2. If you save 10 cents a day, how much can you save in a leap year?

3. A grocer sold me 6 qt. of berries. What part of a peck did he sell me?

4. How much will 2 gal. 2 qt. of milk cost at 3 cents a pint?

5. Three inches is what part of a foot?

Rapidly change to 36ths:  $\frac{2}{3}$ ;  $\frac{3}{4}$ ;  $\frac{5}{6}$ ;  $\frac{5}{12}$ ;  $\frac{4}{9}$ ;  $\frac{5}{8}$ ;  $\frac{7}{9}$ .

6. What part of \$4 is 3 dimes?

7. Cloth that cost 84 cents a yard was sold for 96 cents a yard. How many cents were gained on 12 yd.?

8. What is the difference in square inches between an 8-foot square and 8 square feet?

9. If  $\frac{2}{3}$  of a yard costs 10 cents, how many yards can be bought for 80 cents?

10. If a tenant pays for rent 1 pk. out of every bushel of peas he raises, what part of his crop is paid for rent?

**Written.**

1. Divide 8990 by 489. Prove the answer.
2. There are  $21\frac{1}{2}$  lb. of meal in one bag,  $18\frac{3}{4}$  lb. in another, and  $15\frac{1}{2}$  lb. in another. How many pounds are there in all the bags?
3. If from a piece of cloth of  $105\frac{3}{4}$  yd.,  $17\frac{3}{4}$  yd. were cut, how many yards remained?
4. 284 equals  $\frac{4}{5}$  of the number of children in a school. How many children are there in the school?
5. After changing the numbers to decimal form, subtract  $59\frac{17}{100}$  from  $82\frac{3}{10}$ .  
\_\_\_\_\_
6. I bought a house for \$245 $\frac{1}{2}$  and sold it for \$195 $\frac{3}{4}$ . What was the gain or loss?
7. A family uses 2 qt. of milk a day. How much is the bill for the month of May, at 4 cents a pint?
8. I bought books for \$525. I sold them at a gain of  $\frac{2}{3}$  of the cost. What was the selling price?
9. A square field is 20 rd. on a side. How much will it cost to build a fence around it at \$1.50 a rod?
10. At 75 cents a square foot how much will it cost to pave a sidewalk 25 ft. long by 12 ft. wide?

**XCIX****Oral.**

Rapidly change to lowest terms:  $\frac{18}{48}$ ;  $\frac{37}{66}$ ;  $\frac{8}{40}$ ;  $\frac{27}{33}$ ;  $\frac{15}{24}$ .

1. A parlor is 18 ft. wide and 24 ft. long. How many yards of carpeting 1 yd. wide will be needed for it.\*

\* Reduce the dimensions in feet to yards.

2. If  $\frac{4}{7}$  of my money is \$32, what is the whole amount?

3. There were 56 children in a class. The teacher promoted  $\frac{7}{8}$  of them. How many were promoted? How many were left back, and what part of the class was not promoted?

4. Add  $\frac{3}{4}$  and  $\frac{1}{8}$ .

5. John spent 3 cents for pencil, 5 cents for a blank book, and 2 cents for a pen. How much in change would he receive from one half dollar?

Rapidly change to lowest terms:  $\frac{33}{44}$ ;  $\frac{36}{48}$ ;  $\frac{15}{16}$ ;  $\frac{60}{72}$ ;  $\frac{41}{52}$ .

6. How many ounces are there in 12 lb. of tea?

7. If 5 books cost \$1.75, how much will 1 cost?

8. From  $\frac{7}{8}$  take  $\frac{1}{4}$ .

9. Add 17, 18, 15, 16, and 14.

10. If  $\frac{3}{4}$  of a yard of ribbon costs 15 cents, what is the cost of 1 yd.?

### Written.

1. Add: \$9665.75      2. A merchant sold  $95\frac{1}{2}$  yd. of  
8769.38 cloth to 1 man,  $117\frac{3}{4}$  yd. to another,  
3958.85 and then had  $49\frac{7}{8}$  yd. left. How  
5866.28 many yards had he at first?

2949.56

23.53

3. Reduce  $561\frac{1}{8}$  to a fraction.

4. A man buys a farm for \$6550 and sells it to gain \$2825. For how much does he sell it?

8. A lady paid  $\frac{1}{3}$  of her money for a bonnet,  $\frac{1}{4}$  of it for a shawl, and  $\frac{1}{8}$  for a pair of shoes. What part of her money had she left?

9. A pole stands  $\frac{1}{4}$  in mud,  $\frac{1}{8}$  in water, and the remainder in air. How much of the pole is in the air?

10. Find the difference between  $1\frac{1}{2}$  and  $\frac{3}{4}$ .

**Written.**

1. How much will it cost to carpet a room 30 ft. long by 27 ft. wide, with carpet 1 yd. wide, at \$.75 a yard?

2. What is the width in rods of a field 60 rd. long which contains 15 A.?

3. How many square yards are there in the surface of a blackboard 36 ft. long by 5 ft. wide?

4. Mr. Walker bought a plot of ground 200 ft. long by 100 ft. wide and paid \$8000 for it. Into how many 25-ft. by 100-ft. city lots could he divide it? How much would he gain by selling each lot for \$2700?

5. He wishes to inclose 2 of these lots with a wire fence. How much will it cost him to do so if he pays  $6\frac{1}{2}$  cents a foot for the wire?

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6. Put the following into bill form and receipt the bill: 8 boxes raisins at \$6.25; 150 lb. sugar at  $7\frac{1}{2}$  cents; 12 lb. currants at 15 cents; 52 gal. kerosene at  $12\frac{1}{2}$ ;  $12\frac{1}{2}$  lb. butter at 40 cents; 25 lb. lard at 16 cents; 3 bbl. potatoes at \$2.50; 1 bbl. of flour at \$10.75; 4 bags feed at \$1.12 $\frac{1}{2}$ .

7. A rectangular field is in length 150 rd., in breadth 130 rd. Find the number of square rods in the field, and also the number of acres.

8. A room 18 ft. wide and 24 ft. long was covered with carpet 1 yd. wide at \$1 per yard. How much did the carpeting cost?

9. I have a rectangular field 180.5 rd. long and 97.75 rd. wide. How many rods of fence shall I have to buy to inclose it?

10. If a lot 60 rd. by 40 rd. is planted in corn and produces 30 bu. to the acre, how many bushels does the owner get in all?

## XCV

## Oral.

Rapidly add :

4	5	5	4	9	8	6	5	3	5	3	8	2	5	7	6	6	9	8	7
6	4	4	4	9	8	6	5	3	5	3	7	2	5	7	6	6	9	7	7
3	4	3	4	9	8	3	5	3	2	2	7	7	3	5	2	6	8	9	7

1. Mr. Jones has 17 bags of clover seed, each containing 2 bu. How much is his clover seed worth at \$5 a bushel?

2. John's mother gave him 25 cents. He bought 3 oranges at 4 cents each and 5 bananas at 2 cents each. How much money had he left?

3. When flour is worth \$6 a barrel, how many barrels will \$1200 buy?

4. If a man receives 50 lb. of sugar in exchange for 25 lb. of cheese at 10 cents a pound, what is the price of the sugar a pound?

5. Multiply 600 by .9; by .08; by .6.

---

## TABLES

### DRY MEASURE

2 pints (pt.) = 1 quart (qt.)  
8 quarts = 1 peck (pk.)  
4 pecks = 1 bushel (bu.)

## LIQUID MEASURE

4 gills (gi.) = 1 pint (pt.)  
2 pints = 1 quart (qt.)  
4 quarts = 1 gallon (gal.)

## LONG MEASURE

**12 inches (in.) = 1 foot (ft.)**  
**3 feet = 1 yard (yd.)**  
**5½ yd. or 16½ ft. = 1 rod (rd.)**  
**320 rods = 1 mile (mi.)**

## SQUARE MEASURE

144 square inches = 1 square foot  
9 square feet = 1 square yard  
30½ square yards, or  
272½ square feet = 1 square rod  
160 square rods = 1 acre (A.)

### CUBIC MEASURE

**1728 cubic inches = 1 cubic foot**  
**27 cubic feet = 1 cubic yard**

### AVOIRDUPOIS WEIGHT

16 ounces (oz.) = 1 pound (lb.) 6  
100 pounds = 1 hundredweight (cwt.)  
20 hundredweight = 1 ton (T.)  
2000 pounds = 1 ton (T.)  
2240 pounds = 1 long ton 5  
196 pounds = 1 barrel of flour

### TIME TABLE

60 seconds (sec.) = 1 minute (min.)  
60 minutes = 1 hour (hr.)  
24 hours = 1 day (da.)  
7 days = 1 week (wk.)  
52 weeks 1 day, } = 1 common  
or 365 days } = year (yr.)  
366 days = 1 leap year  
12 months (mo.) = 1 year

**UNITED STATES MONEY**

10 mills (m.) = 1 cent (¢ or ct.)  
10 cents = 1 dime (d.)  
10 dimes = 1 dollar (\$)

### MISCELLANEOUS TABLE

12 things = 1 dozen  
12 dozen = 1 gross (gr.)  
24 sheets = 1 quire (qr.)  
20 quires = 1 ream (rm.)

6. Divide 72,430 by 600; 56,387,263 by 852. Prove the answers.

7. If there are 56 lb. in a bushel of corn, how many bushels are there in 19,320 lb. of corn?

8. Two men start from the same place at the same time, and travel in opposite directions, one at the rate of 25 mi. a day and the other at the rate of 32 mi. a day. How far apart will they be at the end of 8 da. of traveling?

9. Reduce  $51\frac{5}{8}$  to an improper fraction.

10. Reduce  $4\frac{317}{5}$  to a mixed number.

### XCVI

Oral.

Rapidly answer:

$$9 + 8, - 6, + 9, - 3, - 4, + 6, - 10, + 8 = ?$$

$$16 - 8, + 4, - 6, + 3, + 8, - 12, + 8, + 7 = ?$$

$$19 - 12 + 7 - 14 + 6 - 3 + 17 - 10 + 5 + 1 = ?$$

Count by 6's from 4 to 100. Count by 7's from 5 to 103.

1. How many 4ths are there in  $7\frac{3}{4}$ ?

2. Reduce  $\frac{3}{8}$  to lowest terms.

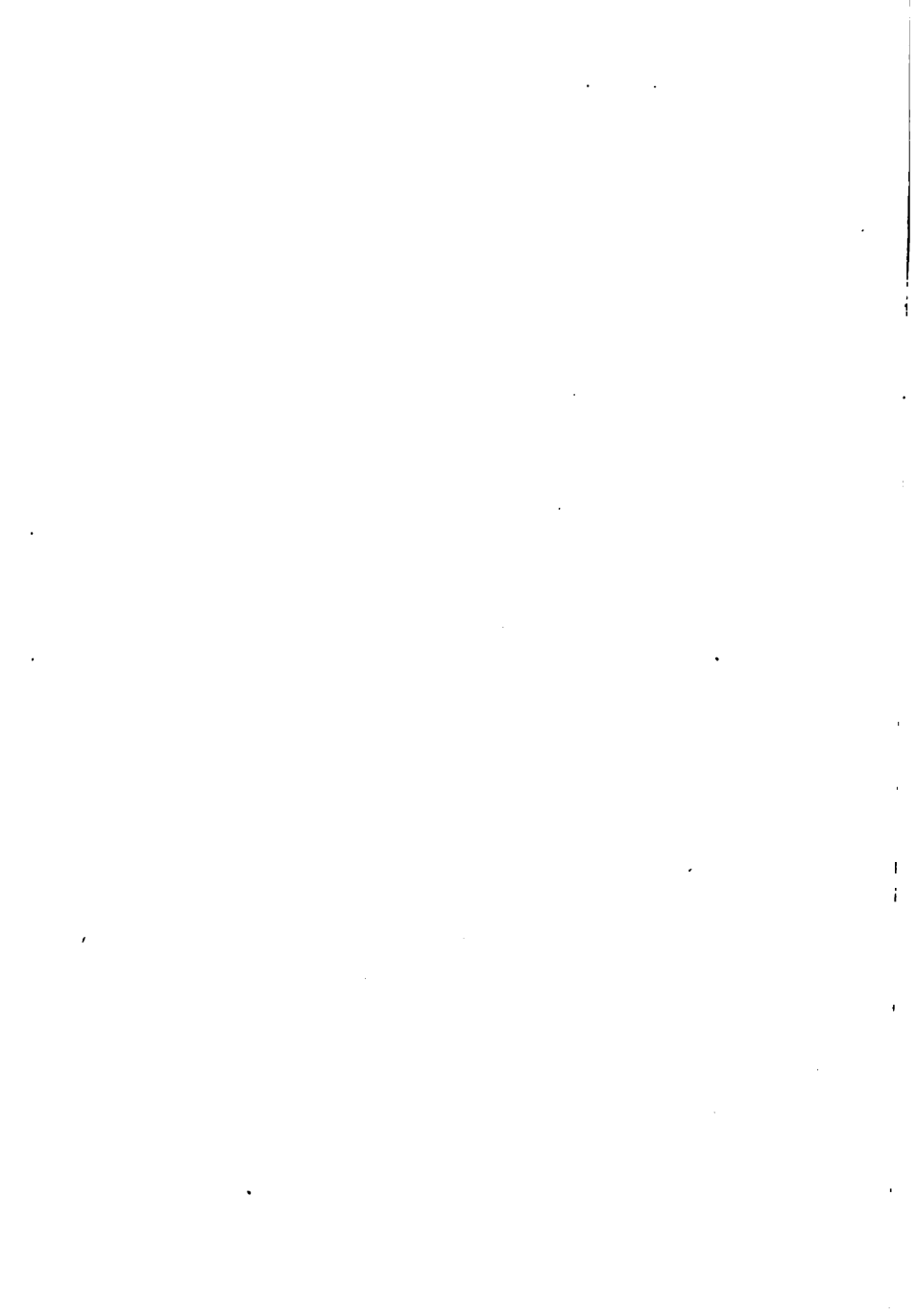
3. How many yards of fringe will it take to put around a table cover 108 in. long and 72 in. wide?

4. How many cubic inches are there in a block of marble 12 in. long, 8 in. wide, and 3 in. thick?

5. How many 2-in. cubes can you put in a box 8 in. long, 4 in. wide, and 2 in. deep? (Make a diagram on the blackboard.)

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5. At 8 cents a quart, how much will 8 qt. 1 pt. of milk cost?

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6. Which is the greater,  $\frac{4}{5}$  of 130 or  $\frac{5}{7}$  of 119? What is the difference between them?

7. Which is the greater,  $\frac{5}{7}$  or  $\frac{3}{4}$ ? What is the difference between them?

8. Find the value of  $(6.125 + 8.75 - 9.50) \div 25$ .

9. If 90 T. of coal cost \$472.50, what will be the cost of 132 T.?

10. If  $4\frac{1}{2}$  lb. of tea cost \$2.70, how much will  $\frac{1}{2}$  lb. cost? (Use the ratio method.)

### XCVII

#### Oral.

Rapidly add; then subtract:

43	42	60	42	71	74	43	81	25	76	30	26	42	61	37
<u>24</u>	<u>16</u>	<u>19</u>	<u>17</u>	<u>24</u>	<u>22</u>	<u>26</u>	<u>17</u>	<u>12</u>	<u>25</u>	<u>30</u>	<u>13</u>	<u>38</u>	<u>20</u>	<u>19</u>

1. If a girl in a factory receives \$1 $\frac{3}{4}$  for making 4 shirt waists, how much will she receive for making 12 shirt waists?

2. If a man earns \$2 $\frac{3}{4}$  a day, how much does he earn in a week of 6 days?

3. James lives  $1\frac{1}{2}$  mi. north from the schoolhouse and Henry lives  $2\frac{3}{4}$  mi. south. How far apart do they live?

4. A man paid \$3 $\frac{1}{2}$  for the use of a boat for 7 days. At that rate how much would it cost to hire it for 21 da.?

5. How much would 3 $\frac{3}{4}$  doz. bananas cost at 12 cents a dozen?

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or before the date last stamped below

10-6-40

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- |  |                                   |
|--|-----------------------------------|
| 8. What is the cost of 40 qt. of milk at 2 cents a pint?   | 10. Add: $175\frac{1}{2}$         |
|  | $80\frac{1}{2}$                   |
| 9. I drew \$350 from the bank. This was $\frac{1}{4}$ of the whole amount which I had in the bank. How much had I in the bank? | $164\frac{1}{2}$                  |
|  | $75\frac{1}{2}$                   |
|  | 68                                |
|  | <u><math>57\frac{1}{2}</math></u> |

## XCVIII

## Oral.

Rapidly change to 12ths:  $\frac{2}{3}$ ;  $\frac{3}{4}$ ;  $\frac{5}{6}$ ;  $\frac{1}{2}$ ;  $\frac{1}{3}$ ;  $\frac{1}{4}$ ;  $\frac{2}{5}$ .

1. If 72 cents are paid for 18 lead pencils, how much would 9 pencils cost at the same rate?
2. If you save 10 cents a day, how much can you save in a leap year?
3. A grocer sold me 6 qt. of berries. What part of a peck did he sell me?
4. How much will 2 gal. 2 qt. of milk cost at 3 cents a pint?
5. Three inches is what part of a foot?

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Rapidly change to 36ths:  $\frac{2}{3}$ ;  $\frac{3}{4}$ ;  $\frac{5}{6}$ ;  $\frac{1}{12}$ ;  $\frac{1}{9}$ ;  $\frac{5}{9}$ ;  $\frac{7}{9}$ .

6. What part of \$4 is 3 dimes?
7. Cloth that cost 84 cents a yard was sold for 96 cents a yard. How many cents were gained on 12 yd.?
8. What is the difference in square inches between an 8-foot square and 8 square feet?
9. If  $\frac{3}{4}$  of a yard costs 10 cents, how many yards can be bought for 80 cents?
10. If a tenant pays for rent 1 pk. out of every bushel of peas he raises, what part of his crop is paid for rent?

